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ABSTRACT

This 10-chapter catalog of teaching skills, which is based on the concept that specific teaching skills vary with the age of the student, social behaviors, and skills or subject matter to be taught, contains sections of special skills, development of training materials, and generic skills. Chapter 1 states that each specialized chapter is structured according to the following: (a) the content field or level of student to which the chapter is devoted, (b) the teaching approaches in this field or at this level, (c) the functions of teachers within specific approaches, (d) teaching skills within teaching functions, and (e) the separation of the indicators for each skill according to context. Chapter 2 discusses systematic development and teaching skills and deals with selecting competencies in this document that justify an instructional development effort. Chapters 3-9 deal with special skills in early childhood programs, socialization and classroom management, elementary language arts, social studies, mathematics, secondary English, and science. Chapter 10 deals with teacher skill training and discusses elaboration of training skills by phases and functions. Tables of skills related to goals and objectives, learning environment, face-to-face instruction, and diagnosis and evaluation conclude this chapter. (PD)

ED 098176

A General Catalog of Teaching Skills

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Richard L. Turner, Editor

MULTI-STATE CONSORTIUM ON PERFORMANCE-BASED EDUCATION
and
LEADERSHIP TRAINING INSTITUTE FOR PROTOCOL MATERIALS

SP008 533

FOREWORD

The Multi-State Consortium on Performance-Based Teacher Education is pleased to make available to interested readers this catalog of teaching skills, edited by Richard L. Turner and developed under the direction of the Leadership Training Institute for Protocol Materials.

The Consortium wishes to acknowledge its gratitude to B. O. Smith, director, and Donald Orlosky, associate director, of the Leadership Training Institute for permission to publish and distribute the catalog.

Readers interested in developing performance/competency based programs should find this publication particularly helpful.

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PREFACE

The professional teacher must acquire concepts to be able to recognize and classify behavior and develop appropriate teaching skills to act on the situations he diagnoses. For the past 4 years, the United States Office of Education has supported programs based on this approach to training personnel. The program to enable teachers to acquire interpretative abilities is the Protocol Materials Program. The program to help teachers acquire skills is the Training Materials Program. Through the Protocol Program, approximately 130 products have been developed in which episodes that exemplify concepts have been recorded to help teachers study and classify behavior. The training materials program has the responsibility to prepare materials that serve as prototypes for others to follow in the development of materials and to train developers in the production of training materials. Nine products have been produced and several hundred potential developers have attended conferences to receive information on and training for the development of materials.

Materials for teacher training can bridge the gap between theory and practice. Theory and practice. Theory and research findings must be translated to the practitioner in a form that enables him to assimilate the knowledge and to apply knowledge appropriately. One cannot rely exclusively on written descriptions of research, presentations of findings in textbooks, lectures or vivid descriptions of behavior, and recommended reactions as a procedure for training personnel. All of these instructional approaches are too distant from the reality of teaching. The real classroom also contains disadvantages for training. The classroom is unpredictable; it does not preserve behavior for study and analysis, and the logistics of arranging adequate and comprehensive classroom contacts for training are monumental. Materials that display behavior can illustrate theory in a form that enables the learner to proceed beyond the vicarious learning of textbooks without relying on the uncertainties of the classroom. Materials provide an intermediate step between reading or hearing about behavior and the immersion in classrooms that depend on chance circumstances to provide training.

The coordination of materials production has been the responsibility of the Leadership Training Institute (LTI) on teacher preparation. When the programs for training personnel in the production of materials began, the LTI recommended that initial training should concentrate on how to analyze concepts and skills and how to produce effective materials. Less concern was given at the outset to the question of which concepts and which skills were most important. This decision was based on two considerations. One consideration was that the field of materials production with rigid quality controls was relatively untapped, and any initial development would make a contribution if it met reasonable standards of appropriately selected concepts or skills. The other consideration was that there was no guarantee that it was technically or intellectually possible to portray behavior on film or other media that would provide the needed content for protocal and training materials. Lacking this assurance, it was decided to proceed with materials development to eliminate speculation about feasibility. Enough experience has now been gained in these two programs to determine that it is possible to develop effective protocol and training materials. The next question to be answered is: Which concepts and which skills should be incorporated in materials production? The question does not imply that production has been inappropriate; it simply admits that a systematic analysis of concepts and skills should be completed to give direction to future development.

The present catalog lists teaching skills and is one of two studies that were supported by the LTI to identify skills and concepts for future development. A forthcoming document lists concepts in the pedagogical domain that will help organize the future development of protocol materials.

The development of this catalog was directed by Richard Turner, who was asked by the LTI to prepare a document that would list generic and specialized teaching skills in selected areas of teacher preparation. The document includes a description of the approach used and the skills that were identified and lists those individuals who were instrumental in preparing this catalog. Though the LTI provided support and gave some technical assistance for the preparation of this catalog, credit for the publication rests with the director of the study and his collaborators.

The catalog lists skills, but the decision remains to determine which skills require special materials and which skills can be acquired through simpler processes. Another question remains as to which skills are most important and should therefore be listed as higher priority than others. Other questions also arise about who should develop materials, how they should be validated, and how distribution and use of materials should be enhanced. In other words, this catalog is a beginning, not an end, in promoting the production of adequate materials, but it serves the essential purpose of providing a comprehensive list of skills as a basis for continued production of training materials.

DONALD E. ORLOSKY
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Institute on Teacher Preparation

A GENERAL CATALOG OF TEACHING SKILLS

Richard L. Turner, Editor

Nicholas Anastasiow and Gilbert P. Mansergh
    TEACHING SKILLS IN EARLY CHILDHOOD PROGRAMS

Jerry L. Brown
    SYSTEMATIC DEVELOPMENT AND TEACHING SKILLS

Lee H. Ehman and Ronald L. Van Sickle
    SOCIAL STUDIES TEACHING SKILLS

Frank Lester
    TEACHING SKILLS IN MATHEMATICS INSTRUCTION

James R. Okey, Hans O. Anderson and Jerry L. Brown
    COMPETENCIES FOR SCIENCE TEACHERS

Alan C. Purves and Bryant Fillion
    TEACHING SKILLS IN SECONDARY ENGLISH

Lawrence J. Schweinhart and Richard L. Turner
    SOCIALIZATION AND CLASSROOM MANAGEMENT

Richard L. Turner
    STRUCTURE OF THE GENERAL CATALOG

Richard L. Turner
    GENERIC TEACHING SKILLS IN TEACHER SKILL TRAINING

James D. Walden
    TEACHING SKILLS IN ELEMENTARY LANGUAGE ARTS

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Indiana University
December, 1973

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CHAPTER 1

STRUCTURE OF THE GENERAL CATALOG

Richard L. Turner

Introduction

To be of maximum use, a catalog of teaching skills should fulfill the immediate purpose of providing a clear, convenient and inexpensive guide for teachers and teacher educators and at the same time fulfill the long-range purpose of moving toward a taxonomy of these skills. To accomplish both of these purposes, the present catalog was conceptualized as a set of free-standing specialty catalogs which could be inexpensively obtained and independently used, and as a general catalog which structured the field in such a way that a taxonomy of teacher skills of theoretical interest as well as direct use by systematic developers could emerge from it.

A major concept underlying the catalog is that specific teaching skills, but not the principal functions of teachers, vary with the age of the student and the social behaviors, skills or subject matter to be taught. Thus the skills of secondary teachers are viewed as closely related to the content they teach, while the skills of pre-school teachers are more nearly controlled by the age of the students than by any specific content or discipline. As one moves from the primary grades toward the middle school or junior high, the developmental level of the student decreases as a factor controlling teacher skills, while content increases as a factor.

To meet the varying factors influencing teaching skills as described above, and to be useful to instructors in specialty areas in teacher education, the general teaching skills catalog was thus constructed to contain as its central content seven special catalogs of teaching skills or "chapters" as follows:

early childhood, socialization and classroom management, language arts in the elementary school, English, social studies, mathematics and science.

Each of these chapters was developed and is intended as a free-standing document which can be obtained and understood independently of the general catalog. Future specialized catalogs extending to such fields as music, art, career education, and physical education, not herein included, can easily be added.

Although the authors believe that the specialized catalogs or chapters will fulfill the purpose of providing clear and convenient guides for teachers and teacher educators, a number of features of the general catalog were designed with longer-range purposes in mind. Two chapters, one on the systematic development of training materials, and one on the apparent generic skills in teaching, are features aimed at both the "occasional developers" among teacher educators, and at persons or groups who wish to engage in the systematic development of training materials.

As Brown suggests in the chapter on systematic development, creating and testing training materials and procedures is a very expensive undertaking. It is too expensive to permit unnecessary overlap and duplication. The generic teaching skills chapter therefore attempts to abstract from the other, more specialized chapters, those skills which seem, at least in the early stages of acquisition, to apply generally to teaching. Thus, this chapter focuses on skills to which the materials developer may wish to give attention.

A second feature of the general catalog aimed at long-range utility is the effort to organize each specialized catalog or chapter around five concepts: 1) approaches to or models of teaching in a particular area (e.g., math), 2) the functions of teachers, 3) the principal teaching skills needed to perform the functions, differentiated, where applicable, according to the various approaches, and 4) the identification of different contexts in which a skill can, in some degree, be acquired and assessed, and 5) the identification of behavioral indicators and/or assessment procedures by which the skill can be recognized and made evaluatable.

The use of these five concepts as the basis for organizing the chapters stems from a conception of teaching, and training for teaching, shared among the authors. The concept that there are different approaches to teaching recognizes that various schools of thought exist concerning the aims of teaching, both generally and in particular substantive fields, and concerning how teaching is to be done. As the reader may later note, these approaches are similar in science, social science and math, but diverge in early childhood, socialization and classroom management, English and language arts.

The concept that there are several distinguishable functions to be performed by teachers recognizes the diversity of the acts that teachers perform. These acts include setting instructional goals, planning for and organizing instruction, diagnosing the state of students, providing for student motivation, presenting material in various forms, arranging the learning environment, and evaluating. The authors found early in their efforts that attempts to prescribe a set list of functions or to state a single order in which teachers are to perform these functions are not profitable when the various fields of teaching and the various approaches to it are taken seriously into account. The emphasis placed on particular teacher functions and the order in which they are to be performed depend greatly on what the teacher is attempting to teach, his or her approach to it, and on the level of students being taught.

The concept that teachers utilize skills in their work is, of course, fundamental to the entire catalog project. As viewed by the authors, a teaching skill can be separated into three components. The first component is the task the teacher is to perform, for example, "establish rapport", "set target behaviors" or "ask inquiry question." This task component is virtually identical to the current concept of a "teacher competency." Indeed, all well-stated teacher competencies name the task the teacher is to perform (as opposed to how the teacher feels, whether he is "sensitive" and the like). Some authors in the current catalog use the term "competency" in the place of the term "skill."

The second component of a teaching skill is made up of the "indicators" of the skill. These indicators are directly observable behaviors, or behaviors inferred from testing situations, which tell how the skill is to be recognized or known.

The third component of a teaching skill is comprised of the skillfulness or level of sophistication of performance of the teaching task. This component involves the appraisal, judging or rating of the performance by observing the behavior indicators. To make a sophisticated judgment of smoothness in executing a skill, some form of scaling for the indicators is required.

In this catalog, the rubric "SKILL:" is used before each task or competency statement and the indicators then follow as specific items or elements. Tests, scales or schedules for appraising or rating skillfulness are not given unless they are essential in clarifying the indicators. What is presented instead is a separation of the indicators according to whether or not they can appear in the college classroom or "learning lab" where teachers are being taught, or whether they appear primarily in microteaching or actual classroom contexts where teachers are performing. For example, a preparatory teacher can be taught to recognize teacher rapport-building behaviors in teacher-pupil interactions shown on film in the college classroom. He can also be tested for his recognition of and verbal knowledge about building rapport. In the college classroom context, however, one cannot establish whether the preparatory teacher can actually execute rapport building as a skill. To determine the latter, the indicators or evidences must be observed and rated as he or she performs in microteaching or in an actual classroom.

The separation of indicators according to the context in which they can be appraised may be recognized as a move necessary to a subsequent direct attack on appraising how skillful a preparatory teacher or an actual teacher is. This move is made in the catalog, but the development of actual assessment procedures, a massive undertaking, was necessarily delayed for future development.

Put together, the concepts addressed above provide a structure for each catalog chapter as follows:

1. The content field or the level of student to which the special catalog or chapter is devoted.
2. The teaching approaches in this field or at this level
3. The functions of teachers within specific approaches
4. Teaching skills within teaching functions
5. The separation of the indicators for each skill according to context: a) college classroom or learning lab, and b) microteaching or actual classroom

This structure is a pre-taxonomical one in the sense that teaching skills can be placed in logical groups. It is not intended as a true taxonomy, however, since the relationships among the defining concepts or variables (content field, approaches, functions, skills, contexts, and indicators) cannot at this stage of development be precisely determined. Nonetheless, the authors believe that the present category system for placing teaching skills as catalog items will prove to be of utility in moving toward a true taxonomy of teaching skills.

CHAPTER 2

SYSTEMATIC DEVELOPMENT AND TEACHING SKILLS

Jerry L. Brown

This chapter is written from the perspective of the instructional developer. It deals with the practical issue of selecting from the competencies listed in this document those which justify an instructional development effort. In dealing with this issue, we will build upon the notion of 'context' or setting for the provision and assessment of instruction.

Because some readers may not be familiar with the systematic development process, a brief description of the procedures comprising this process will be given in the next section. Readers familiar with this process may wish to pass over the next section and move directly to Section 2. There, without explicitly applying the developmental model discussed in Section 1, we will analyze the instructional requirements for various types of competencies. Utilizing Gagne's[1] conception (1970) of learning types, we will see that different competencies require different environments for skill and/or knowledge acquisition and/or performance assessment. From this discussion the concept of 'context' will be developed. Finally, we will present an algorithm that can be used when making developmental decisions such as (1) what competencies to include in a developmental effort, or (2) how extensive a developmental effort is justified in regard to promoting acquisition of a specified competency. It will be our position that systematic development is an ideal always worth striving for, but in some cases, not worth paying for, but more on this later. First an overview as to the nature of systematic instructional development.

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[1] Robert M. Gagne, The Conditions of Learning, (second edition), New York: Holt, Rinehart & Winston, 1970

Section 1. Systematic Instructional Development

Learning can take place in a variety of ways. The instructional developer is concerned with the learning that is the result of predesigned instruction--instruction prepared and packaged in advance of use in the classroom. Predesign of instruction implies that the objectives of instruction are determined in advance and that the instruction is specifically designed to meet these objectives. By being precise about the instructional outcomes (i.e., skills, attitudes and cognitions) that are to be achieved, the developer can evaluate the instructional effectiveness of the experience he or she provides, and can systematically work to improve their impact on the learner. Similar precision in describing the nature of the learning experiences provided allows the developer to recreate instructionally effective learning experiences. This means that learning experiences can be 'exported' and used in a variety of settings (e.g., different teacher education institutions) as well as with succeeding generations of learners. It also means that knowledge about effective educational practice can be accumulated and refined.

It is the instructional developer's emphasis on precision, exportability and refinement of technique which has caused him to be associated with the technologist--indeed, often called an 'educational technologist'. This association with technology is strengthened by the developers' tendency to follow clearly stated, replicable design procedures when developing instructional materials. Although there are variations in the pattern of procedures utilized by developers, it is possible to identify a set of procedures which reflect a systematic approach to the development of instruction. For clarity, these procedures are listed and briefly described in Figure 1 in a linear fashion. In actual practice, however, developers move back and forth across the various steps as they work on their instructional product.

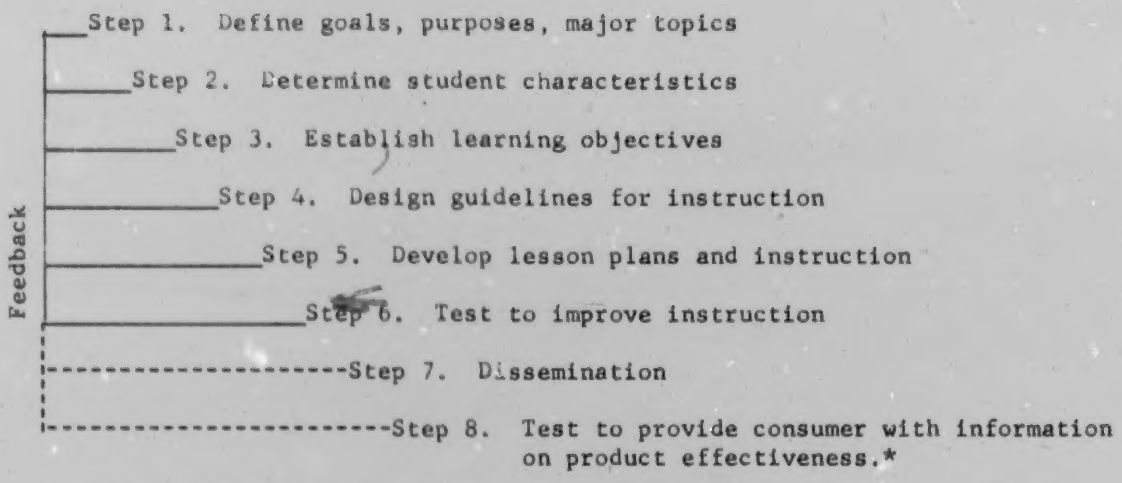
Feedback
Step 1. Define goals, purposes, major topics
Step 2. Determine student characteristics
Step 3. Establish learning objectives
Step 4. Design guidelines for instruction
Step 5. Develop lesson plans and instruction
Step 6. Test to improve instruction
Step 7. Dissemination
Step 8. Test to provide consumer with information on product effectiveness.*

Figure 1. Linear Characterization of Systematic Development Process

*Step 8 is optional. It usually is done by someone other than the developer.

As can be seen in Figure 1 systematic development is characterized as a process in which every step (except Steps 7 and 8) is directly connected to a feedback line. The existence of the feedback line reflects the empirical orientation of the design process and its emphasis upon developmental testing. This testing provides the developer with student performance data on measures assessing the effectiveness of the instruction being developed and provides the developer with an opportunity to improve instruction during the developmental process.

The first step in the development process involves conceptualizing the type of instruction to be developed and establishing, in general terms, the goals, objectives, content and approach for the instruction. During this stage, certain assumptions are made about learners. These assumptions form the basis for defining the learner group for whom the proposed instruction is to be developed. The data upon which these operating assumptions are based are typically derived from research literature pertaining to learning and instruction.

Although useful for orienting a developer in an appropriate direction, information gathered from literature searches is rarely sufficiently detailed to provide an indepth understanding of the subject matter-related knowledge and attitudes of the learners in the proposed target group. Therefore, in Step 2, the developer must prepare and conduct an evaluation study aimed at answering specific developmental questions. Although questions asked vary with the developer and the task, the developer is generally interested in the learners' existing knowledge and skillfulness relative to a prespecified criterion.

Various evaluation techniques can be used to help determine existing performance in relation to this criterion. For example, measures can be used to assess cognitive knowledge about learning and instruction, child development, etc. Techniques involving systematic observation of teacher behavior in natural and manipulated environments can be used to analyze skill components and to gather behavioral data reflecting teacher attitudes and preferences. Written attitude measures can be administered to gather non-performance indicators of attitudes relating to teaching. Choice of method includes consideration of the type of question being asked, the nature of the learner with whom one is dealing, and the extensiveness of the resources available to support the evaluation.

Step 3 begins after a preassessment is complete. Then a characterization of a 'typical' student is generated. The discrepancy between the latter and a hypothetical 'ideal' student in skills, attitudes and abilities provides the basis for the derivation of specific instructional objectives. These objectives serve as the minimum learning outcomes which should be acquired as a result of instructional intervention.

To avoid ambiguity and to reduce the probability of misunderstanding the intent of the intervention, outcomes should be stated as observable student performances. This places constraints on the type of outcomes a developer can claim he wants to achieve, but it generally facilitates selection of the content and the setting for instruction.

In Step 4, the developer prepares an instructional guideline or plan for instruction, relating each specific objective to one or more instructional techniques tentatively judged appropriate for that objective. This guideline serves as the basis for the development of instruction in Step 5, when the developer writes actual lessons and prepares necessary supporting materials.

Step 6 involves examining the effectiveness of the instruction developed in Step 5. The purpose of this type of evaluation is to gain information that can improve the instruction being produced. If instruction is viewed as the manipulation of the conditions of learning in order to produce prespecified changes in behavior, then the purpose of this type of evaluation is to yield information that can be used for making the learning environment more effective and efficient. Evaluative techniques which may be employed include informally working with individual or small groups of students in a simulated setting, small-scale field testing in an actual instructional situation, such as those found within a School of Education, and larger scale field testing utilizing a variety of settings.

After testing and revision, when it is clear that the instruction is effective, the materials are ready for dissemination to other training sites for utilization there. Once this occurs independent evaluation is warranted. The purpose of this type of evaluation, which occurs in Step 8, is (1) to determine what anticipated and unanticipated consequences have been produced, and (2) to generate data that can aid potential users in determining whether or not the product is appropriate for their needs.

Section 2. Dealing with teacher skills.

Teacher skills such as those listed in the following chapters are statements about behavior which are valued because they are assumed to have some bearing on a teacher's effectiveness as an instructor. Behind each competency statement is an implied assumption that such behaviors can be taught, at least to some degree. Without this assumption it would be fruitless to engage in the generation of instruction designed to teach the skill. Rather we would simply screen teacher applicants to determine which ones innately possessed the skills deemed desirable. Applicants who innately possessed the desired attributes would be allowed to teach. Others would be turned away from the schoolhouse doors. Although suggestions are occasionally heard to do just this, the authors of this volume assume that most of the skills referenced in this taxonomy have the potential of being acquired through systematic instruction. Further, it is assumed that many of the skills listed, such as those relating to the preplanning of lessons, can be acquired (or assessed) within a variety of settings, but do not require a learning environment more complex than that associated with the traditional teacher's college classroom. Some skills, however, require more complex learning environments if they are to be acquired. For example, the ability to ask probing questions in a classroom context or the ability to provide corrective feedback to students in a classroom situation are skills that cannot be acquired without access to environments that offer opportunities for practice in the skill, corrective feedback and successive attempts until the desired level of skillfulness is achieved. In other words, these skills cannot be acquired in traditional college classroom environment. More complex environments are needed. These include those associated with simulation laboratories, microteaching centers and systematic inservice observation and critiquing of teachers either by peers, master teachers, or outside consultants. Such training arrangements rapidly become complex and costly to develop and administer, even when supervision is at a minimum. Unless extensive resources are available it is likely that less ambitious instructional configurations will be necessitated and/or systematic development of instruction foregone. This means that the choice of setting and the extensiveness of the development effort will be based upon consideration of factors that include the nature and import of the skill being developed, the resources and alternative settings available to the developer or educator, the costs (actual and opportunity) of utilizing various available settings, and the organizational and administrative resources available to the developer and to prospective users.

Choices among ends and means exist in the area of C.B.T.E. Competencies are goal statements. They tell prospective teachers as well as teacher trainers, developers and others, what the various authors believe a teacher's objective should be in regard to mastering various teaching related outcomes. The competency statements themselves do not--or need not, although they may--convey information about the instructional strategies, settings or evaluation techniques that may be used in producing and assessing the various competencies, nor do they imply how systematic the developmental strategy must be to be used in preparing instruction. Rather, just as in making a trip, the choice of means remains open. What means are utilized depends upon available alternatives and upon the criteria used to compare and contrast the available alternatives relative to the decision-maker's values.

In his book, Conditions of Learning, Robert M. Gagne argues that instructional strategies should be chosen on the basis of their ability to produce specified learning outcomes. Because outcomes in Gagne's typeology differ in complexity, lying along a hierarchy ranging from simple chaining to higher order problem solving,[2] the contexts and strategies required to produce mastery of each type of outcome vary. As learning types become more complex, the environment required to produce such learnings correspondingly becomes more complex. For example, instruction that seeks to give students the ability to describe how teachers can use basic reinforcement principles in their classrooms can be easily provided in a traditional college or university classroom setting either by means of a live or mediated lecture, filmstrip or film production. Application of reinforcement principles in an actual classroom, however, is a more complex task and requires a more complex set of learning conditions. For example, the student might first have to learn to discriminate between examples of positive reinforcement, negative reinforcement and punishment. Such could be developed through the use of protocol material and/or simulation materials. Then, using microteaching, the student might be asked to provide examples of positive reinforcement, etc. Once mastery was achieved in a microteaching situation, on-site practice in an actual classroom could occur. Feedback on the acceptability of performance could be provided in such situations either in real time or after teaching using live observers and/or technologically based monitoring systems. Gradually, after competencies reached a stated level of sophistication and had been orchestrated with other competencies, solo performances in unmonitored classrooms could begin as the teacher assumed normal teaching duties and responsibilities.

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[2] These categories are based upon Gagne's formulation as presented in a cassette tape, Defining Objectives for Six Varieties of Learning, produced for the American Educational Research Association, 1971.

Although Gagne lists at least six types of intellectual outcomes requiring different learning conditions, it is more convenient to think in terms of three basic contexts, or learning environments, necessary for the facilitation of specified competencies.

These are the three contexts typically available to teacher educators. They are (1) the symbolic context, (2) the simulated context, and (3) the work context. Each of these is described below. The descriptions are based upon those provided by Turner (1973).[3]

1. Symbolic context

In this context we are concerned with abilities relating to reading, writing and talking. These are the types of abilities upon which most instruction and performance assessment is based in a college or university context. Learnings relate to being able to list, state, describe or explain what a teacher does, or might do, in a given situation. Rarely is an attempt made, or is it possible, to develop or assess skills related to actual performance in such a context. An example of an activity frequently sustained in such a context is the development and critiquing of lesson plans and sample units of instruction, none of which are usually operationalized and tested in a field or 'work' setting.

2. Simulated context

In this context instruction is made more concrete through the use of audio materials, films, videotapes and/or other types of aids and materials. Teaching of a restricted nature, usually microteaching, also occurs. As Turner (1973) has discussed, the context is usually concrete or semi-concrete on the stimulus side but usually remains verbal or symbolic on the performance side. For example, after seeing a film about how a teacher handles a particular classroom situation, the student may be asked to verbally criticize the film, teacher's handling of the incident, or to relate how the student, if he or she were the teacher, would have handled it. This contrasts to the actual work setting where, if such a problem did arise, an actual response would be required.

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[3] Richard Turner, Evaluating the Validity of Assessed Performances: Methodological Problems. Paper presented at the Annual AERA Meeting, March, 1973.

3. 'Work" Context

Instruction within a 'work' context may occur under natural or controlled conditions. In either case the nature of the experience is concrete and involves the integration of teacher words and behavior for the prevention or solution of instructional problems. Traditional uses of the work context by pre- and inservice teacher educators include supervised student teaching (i.e., a quasi-controlled form of activity) and consultation/visitations by principals, master teachers or visiting consultants. Performance assessment, under either manipulated or natural conditions, may be made by systematic observation, expert rating of teacher skills and/or the collection of pupil performance data.[4]

Each of these three contexts may be ordered according to the degree of reality of the experiences provided within each context. If this is done the symbolic context falls at the low end of the scale and the 'work' context falls at the high end of the scale. Other orderings are also possible. For example, it is possible to order the contexts according to the degree of control one can exert over the experiences provided, or according to the administrative skills necessary to conduct training in such a context, or to the costs involved in using one context compared to another. When such orderings are done, as in Table 1, it becomes apparent that various tradeoffs must be made in selecting a context or series of contexts in which to work.

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[4] In the following chapters the distinction between simulated and work context is ignored. Indicators are provided for competencies for two contexts, 'Classroom', or learning lab, (i.e., symbolic) and simulated or real.

Table 1. Ordering of Contexts on Different Attributes

Representative Characteristics of setting	Context for Instruction or Performance Assessment		
	Work or Field Setting (real context)	Learning or Simulation lab (simulated context)	University Classroom (symbolic context)
Degree of control over Learning Environment*	Lo	Hi	Hi
Motivational Stimulus	Hi	Med-Hi	Lo
Logistical Complexity	Hi	Med-Hi	Lo
Management Complexity	Hi	Med-Hi	Lo
Cost/Hour Instruction	Hi	Med-Hi	Lo
Relationship of performance acquired or assessed to criterion performance	Hi	Med	Lo

*Ratings are from perspective of teacher educator

Because most teaching competencies can be addressed, at least partially, within each of the three contexts listed and because most complex teaching skills can be conceptualized as requiring the use of each context at various stages of acquisition, a basic question must be faced. This is the degree to which one is willingly able to utilize the various contexts.

Put differently, the question relates to the degree of proficiency in skill performance one is willing to accept and the degree to which one is willing to incur expenses to attain this level of proficiency. Given a program that involves limited number of competencies, a resourceful, administratively skilled staff and access to funds sufficient to support an extensive endeavor, a decision to utilize each of three contexts for every skill being addressed may be appropriate. Given a more typical situation, where resources are limited, the staff inexperienced, and competencies that serve as the goal of training numerous, a decision to extensively utilize all three contexts may be most unwise. In a situation such as this priorities must be assigned to competencies so that when instruction is oriented towards high-priority competencies a wider range of contexts is available.

Even in the latter instance, restraints may be placed on the variety of contexts available. If, for example, it is decided that instruction provided students should be systematically developed, tested and revised in a potentially exportable form. This activity will consume resources that might otherwise be spent in utilizing simulated or work contexts for less systematically developed instruction. Since most schools of education, unless they have outside support, do not have the capabilities to sustain large scale instructional development efforts, most will probably prefer to operate on the scale of a cottage industry. In doing this, systematic instructional development procedures may be applied to small units of instruction or to extremely high priority items, but most instruction will be prepared in a less than systematic manner using a minimum number of contexts. Professional curriculum developers and centers, such as the Educational Laboratories, probably will also operate on a similar basis. Competencies which fall within the organizations' capability to develop, and which offer promise of marketability will be addressed as systematically as possible. Unless governmental support is provided, however, it is unlikely that large scale development projects utilizing a variety of contexts can be sustained. The reason is that systematic development is a time-consuming, difficult and costly process. When instruction must be provided in a variety of contexts and when teacher classroom performance, rather than symbolic or simulated performance, are goals of the product being produced, costs of development are even further increased. Thus it becomes necessary to ask when it becomes economic to be unsystematic in developing instruction.

Although the foregoing may sound akin to heresy, it is possible to generate situations in which the systematic development of instruction simply may not be worth the time, effort or expense. As a general rule such situations arise when the materials to be produced are likely to reach a limited audience, when the competencies produced are not considered vitally important to teacher success, and when the life span of the materials is likely to be short. Opposing situations are those which involve materials which are likely to have considerable longevity, and/or which address critical competencies. An algorithm such as the one reproduced (on the next page) is useful for selecting among competencies and for determining how intense a developmental strategy one wants to follow when developing competency-oriented training materials.

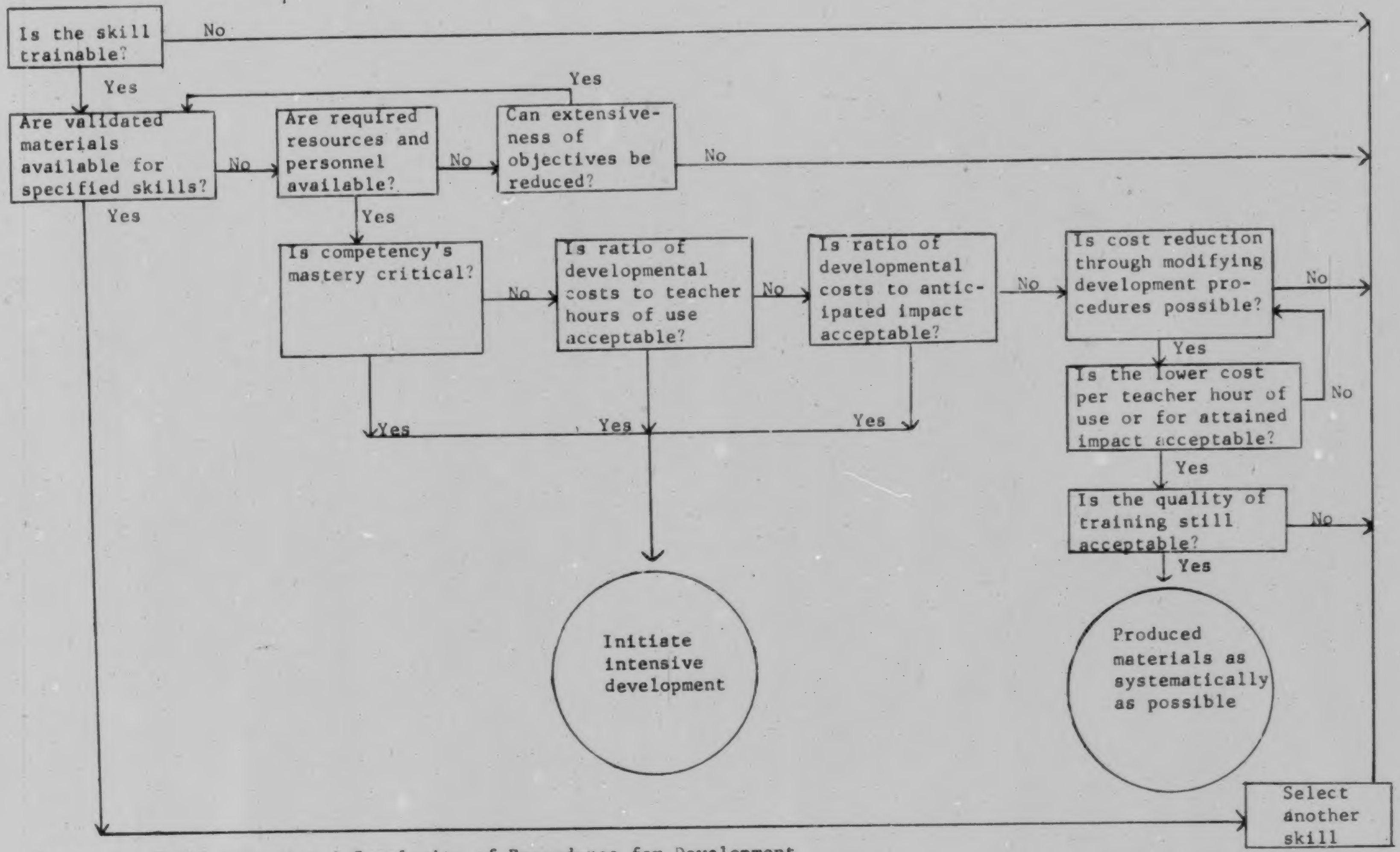
Is the skill trainable?
No
Yes
Are validated materials available for specified skills?
No
Yes
Are required resources and personnel available?
No
Yes
Can extensive-ness of objectives be reduced?
Yes
No
Is competency's mastery critical?
No
Yes
Is ratio of developmental costs to teacher hours of use acceptable?
No
Yes
Is ratio of developmental costs to antic-ipated impact acceptable?
No
Yes
Is cost reduction through modifying development pro-cedures possible?
No
Yes
Is the lower cost per teacher hour of use or for attained impact acceptable?
No
Yes
Is the quality of training still acceptable?
No
Yes
Initiate intensive development
Produced materials as systematically as possible
Select another skill

Figure 2. Skill Selection & Complexity of Procedures for Development

As can be seen in Figure 2, there are five classes of skills. They are as follows:

1. Skills which cannot (readily) be promoted through the use of training materials (e.g., those that pertain to basic intellectual abilities or personality traits).

2. Skills for which validated materials are currently available and, consequently, which do not merit sessions as the focus of a development effort.

3. Skills which can be promoted by training and whose import justifies intensive development.

4. Skills which can be promoted by training and whose probable wide usage and/or length of use justifies the cost of intensive materials development.

5. Skills which can be promoted by training but whose probable impact relative to development costs does not justify intensive materials development.

In using the algorithm you may find certain skills in the following chapters which fall into the first category. These skills will most likely relate to intellectual abilities, personality traits or entities such as 'teaching style'. Similarly you may uncover several skills for which validated instruction already exists. The third category may or may not contain entries depending upon your values or those of one person or team doing the algorithm. The explicit use of reinforcement procedures may be critical competency for some educators, for others it could matter less. A similar situation pertains to the fourth and fifth categories. It is here where most of the skills which pertain to teaching fall, including most of those noted in this handbook. Whether a skill justifies materials which are more, or less, intensively developed depends on the rater's values and estimation of resources required to produce the skill relative to the gain expected from its mastery or approximation. For example, consider the following objective.

Sample Objective[5]

Demonstrate question-asking skills by asking questions in a class discussion which meet the following standards:

1. At least 40% of the questions are above the comprehension level as defined by Bloom, et al.
2. At least one of the questions is from each level of Bloom's Taxonomy of Educational Objectives: Cognitive domain.[6]

Should materials be produced so that teachers can master this objective; and, if so, how intensive of a development process should be used? Let's use the algorithm.

Is Competency Trainable?

There are three things short of an empirical investigation which can help us reach an operating decision:

1. Can component behaviors be identified?
2. Does the existing knowledge base support the proposition that each of the component behaviors can be mastered through training?
3. Can a training context, or series of contexts, as well as instructional procedures be imagined for each competency in question?

For the objective listed above the following competencies can be identified among those likely to be required for successful performance:

a. give reasons for asking questions at various levels of thought when teaching[7]

b. write a brief definition of each of the six categories of Bloom's Taxonomy.

c. classify written questions using the six categories of Bloom's Taxonomy.

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[5] This objective is taken from Question Asking Skills for Teachers, J. R. Okey, D. W. Humphreys & L. E. Bedwell, Bloomington, Indiana: National Center for the Development of Training Materials in Teacher Education, 1973.

[6] Bloom, B., ed., et al. Taxonomy of educational objectives: Cognitive domain. New York: David McKay Co., 1956.

[7] Objectives are based on those in Question Asking Skills for Teachers by James R. Okey, Donald W. Humphreys and Lance E. Bedwell, Bloomington, Indiana: National Center for the Development of Training Materials in Teacher Education, 1973.

d. write questions at each of the six levels of Bloom's Taxonomy for a given topic.

e. plan questions for use with learners.

f. sequence questions according to the level of thought required to answer

g. given a taped classroom discussion codes questions asked by the teacher according to their level in Bloom's Taxonomy.

h. determine the percentage of each level of questions asked by the teacher during the discussion

i. asks questions of varying levels of complexity when leading a small group discussion

j. given a recording of a small group discussion that the student has led, the student will classify his or her questions by level according to Bloom's Taxonomy

k. the student will determine if his or her performance meets a preset criterion.

l. if performance is below criterion the student will identify how the deficiency may be corrected

m. ask questions of varying levels of complexity when leading a class discussion.

Looking at the type of behavior required by each of the items above possible instructional contexts and training procedures may be identified for promoting acquisition of each type of behavior. Context assignment and identification of a sample teaching procedure are listed in Table 2 for each sub-objective.

Table 2. Assignment of Subobjectives to Most Likely Context and Identification of Possible Teaching Procedure

Subobjective	Most Likely Context for Instruction of Performance Assessment			Possible Training Strategy
	Work	Learning or Simulation Lab	University Classroom	
A			X	a) Lecture/Discussion or Reading
B			X	b) Written Exercise
C			X	c) Written Exercise
D			X	d) Written Exercise
E			X	e) Written Activity - individual or group
F			X	f) Written Activity - individual or group
G		X		g) Audio tape or Classification Sheet preceded by mediated instruction with practice
H		X		h) Exercise Sheet & Calculator
I		X		i) Small group discussion in microteaching lab
J		X		j) Playback of Microteaching Session with coding sheet and possible observer critic
K		X		k) Exercise Sheet & Calculator
L			X	l) Lecture/Discussion with exercises on modification of question asking skills
M	X			m) Actual lesson in school setting with tape monitoring

A carefully structured, mediated training program involving paper and pencil materials, structured practice, and systematic feedback conceivably could be intensely developed to produce mastery performance with a small tolerable error on the part of teachers. Such a program using all settings would be expensive to develop. A less elaborate program could also be developed either through a reduction in settings utilized or the degree of systematization used to develop the instruction. In either case, it appears that it is feasible to use materials for promoting mastery of the skills. Therefore we move to the next decision-point in the algorithm.

Are Validated Materials Available?

Answering this question requires a search of existing materials, if there are any, to determine which have been systematically developed and which have not. If validated materials are available which produce mastery of desired objectives, it usually makes little sense to continue with a materials development project on the same objectives. Although it is usually possible to discern differences in approach and style between existing materials and those being contemplated, unless substantial differences in approach and in objectives pursued exist, it may be more productive to devote one's time to a different task. In the case of objective being used for an example, a number of textbooks and films have treated question-asking skills, none of these, however, have been systematically tested and revised to any degree, so there is no assurance that they 'teach.' Further consideration of this objective is therefore warranted.

Are Required Resources and Personnel Available?

Development is typically an expensive, time-consuming activity, best accomplished by a team of educators representing different specializations. The most productive sites for this type of development include regional labs and dedicated R and D centers. A small-scale cottage industry form of development is also possible. Here developmental techniques are applied but on a very limited basis. This is the type of development activity which typically occurs within university settings when one or two faculty members, and perhaps a handful of graduate students, undertake a development project. It is also the most prevalent mode of development. Because of the operating restraints present in university settings and the tendency for this type of environment to support only small scale developmental activities, pencil and paper materials, filmstrips and, perhaps, some film materials will be the most frequent outputs of systematic development at this level. Often the production and testing of these materials will strain the capacities of the institution and of the faculty developers responsible for their production. For this reason, complex developmental projects are probably best left to organizations such as regional laboratories, private industries, or specially created university-based developmental centers staffed with a core of full time developmental specialists. Unless sufficient resources can be devoted to support a systematic developmental effort for a particular objective, or set of objectives, the activity should be foregone or reduced in scope. The latter move can be made by reducing the extensiveness of the objective(s) pursued, the contexts utilized for training and performance assessment, or, as indicated at a later state in the algorithm, by sacrificing the intensiveness of the developmental procedures used. Since the sample objective with which we have been dealing is a complex objective requiring a variety of media and settings, materials that lead to acquisition of skill would be fairly expensive to produce. Before continuing to the next stage, it is important that a realistic assessment be made of resources--monetary and otherwise--required to produce quality materials. If resources are sufficient, we can proceed to the next stage in analysis. Otherwise, the project should be reconsidered.

Is the Competency Critical?

In the last section cost factors and ability to provide necessary resources were discussed. Offsetting cost factors are the benefits a product is expected to produce. The values of the developer are important in deciding how important is a particular teaching competency. Were we training airplane pilots the problem of values would be less acute. It is clearly important that a pilot be able to land his plane once it was in the air; thus once the decision is made that flying is to be permitted, teaching landing skills becomes an important, if not critical competency. It must be taught. But what are critical teaching skills? Do the tasks composing the sample objective, for example, amount to a critical teacher skill? If you agree that teachers should be able to identify and ask questions of higher taxonomical levels, your answer probably will be 'yes'. But how important is it? How much time and money does mastery of the objective justify relative to other teaching skills?

Where we are able to agree that mastery of a certain competency definitely is critical then the costs of intensively developing training materials leading to mastery of that competency are easier to justify than is the same decision in situations where mastery of an objective is of questionable import. Unfortunately, little in the way of concensus exists among teacher educators about critical teacher competencies. Production of materials for most competencies therefore will be decided in terms of market potential, probable longevity and likely impact on the educational practice.

Is ratio of developmental costs to student years of use acceptable?

Systematic development is expensive. When development/diffusion costs can be amortized over many students, the hourly cost of instruction, assuming the instruction has some payoff, may justify large developmental expenditures. Where only a few students are likely to come into contact with materials, systematic development may not--and probably will seldom--justify the costs required to support it. If a large, continuing market can be hypothesized to exist for materials leading to mastery of an intensive development of materials for that objective can be justified. Otherwise other grounds must be found to justify intensive development.

Is ratio of developmental costs to anticipated impact acceptable?

Development often can be justified in terms of the impact that a set of materials can be expected to make on educational thinking and practice. For example, a product can serve as a model which, in turn, can influence the appearance of other educational products. Similarly the process by which a particular product was produced can serve as a model which can be emulated. Moreover, conscientious examination of and experimentation with the procedures used to develop products can be employed to generate new knowledge regarding the instructional developmental process itself. For example, if by systematically developing materials for our sample objective we were able to convincingly demonstrate the value of certain instructional development principles, if we could gain information about the organizational climate needed to foster successful products, and if we could gain one or two 'rules of thumb' for guiding instructional development decisions, then production of materials might justify considerable expenditures, even if the product were never used. Such situations are likely to be infrequent. Therefore, in most cases, development of a product can be expected to be justified in terms of the payoff expected from teaching teachers certain skills. If the payoff is high, relatively high developmental costs can be tolerated even if the audience potential for the product is small and, consequently, unit cost of an hour of instruction high. If, for example, it could be shown that a representative sample of elementary teachers never attempted to have students answer questions higher than the knowledge level in Bloom's Taxonomy, and if this fact were judged harmful for present and later learning, then production of a product aimed at elementary teachers might be justified even if the per hour cost of instruction was high. How high? Again, values are important in formulating some answer . . . depending on one's orientation some cost eventually will be unacceptable. Then the next stage in decision making becomes important.

Is Cost Reduction Through Modification in Development Procedures Possible?

Depending upon the elaborateness of the instructional system envisioned, the nature of the tryout-revision process, and the number of iterations envisioned as part of materials testing and revision, cost of production can vary greatly. The more elaborate the components, i.e., the more media used, the more real settings utilized, the larger the field-testing audience, the more systematic the development, the greater the cost. Cost reductions can be made in any or all of these areas. For example, the imaginary product to be developed for the sample objective was initially conceptualized as a multi-media product involving a number of instructional settings. Simplification of the media used, for example, eliminating any filmbased instruction (e.g., filmstrip, motion picture, etc.) could reduce cost. Reduction in the number of sites for field testing, number of teachers trained, and recyclings through the developmental process could also help reduce costs. Do these reductions make development more feasible? These are questions faced next.

Is the Lower Cost Per Teacher Hour of Use and or Level of Anticipated Impact Acceptable?

If development costs can be reduced, can they be reduced to a level that justifies production? The factors which influenced our thinking at earlier stages now must be reanalyzed in light of the new cost data.

Is Quality of Training Acceptable?

Reductions in the scope of a product or the intensiveness of the development process are likely to affect product quality. A decision must be made as to whether or not the quality of training likely to result from the modified process will be within acceptable limits. If it appears that it will be, production is justified. If not, the project should be dropped or a justification developed that does not involve teaching training (e.g., likelihood of producing new knowledge). In most cases it would be expected that the product would be abandoned.

SUMMARY

Throughout this taxonomy of teaching skills lists of skills can be found which indicate what author's of various chapters believe to be important within their area of interest. Because there are more skills listed than one can hope to deal with and because some skills are likely to be more important than others, choices must be made concerning which competencies warrant development. In making such a choice it is important to consider one's ability to deal with a competency, especially when criteria for acceptance of acquisition of that competency are strict. Strict criteria involving minimal levels of error in performance are likely to imply the need for intensive development activities involving a series of tryouts and revisions. Where the nature of the competency being developed is such that it can be developed in a symbolic context such as a teacher college classroom, systematic instructional development is often warranted and is often administratively possible, even for teacher education institutions with limited resources. Where the nature of the competency being developed is such that other contexts, such as microlaboratories or working settings are required, systematic approaches to instructional development may not be organizationally feasible, although such approaches may be desirable.

The algorithm just discussed is offered as a potentially useful aide for organizing one's thinking about skill selection and extensiveness of systematic development possible within a particular organizational environment.

CHAPTER 3

TEACHING SKILLS IN EARLY CHILDHOOD PROGRAMS[1]

Nicholas J. Anastasiow and Gilbert P. Mansergh

One can define teacher skillfulness in early childhood education in many ways. Each set of descriptors has some advantages and disadvantages. Commonly, the usefulness of early childhood approaches has been evaluated by a prospective consumer on the "child-oriented" versus "teacher-oriented" dimensions. The advocates of child-oriented programs typically have assumed that the child has control of his own learning in an environment where the teacher acts as a facilitator or stimulator of pupil development. On the other hand, the advocates of an extreme teacher-oriented position have assumed that the child must receive training in an environment in which the teacher directs, leads or instructs. Here, the teacher is perceived as the one who makes input into the child by the manner in which "lessons" are conducted. Although much heat has been generated over the efficacy of these two extremes concerning the appropriate manner by which to provide for child learning, few if any exemplars of either the child- or teacher-oriented approach exist. Bank Street and the UCLA demonstration school probably come the closest to the child-oriented approach, and the school district kindergarten in most areas of the United States comes closest to the teacher-oriented approach.

Kohlberg (1972) has taken a different approach and has proposed a useful set of "schools of thought" from which to view early childhood education programs. Although his descriptions are heavily biased in the direction of the approach he prefers, a summary may be useful as a heuristic from which to view teaching skillfulness.

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[1] The authors wish to thank Dr. Annie Butler of Indiana University, Dr. Edith Dowley, Director Bing Nursery School, Stanford University, and Drs. Loretta Golden, Donald Stedman, and Ronald Weigerink of the Frank Porter Graham Child Development Center, University of North Carolina for their valuable critiques of earlier drafts of this chapter.

Kohlberg proposes that there are three major movements in early childhood education, which he defines by the headings Romantic Maturational, Cultural Transmission and Progressive Developmental. To Kohlberg, the Romantic Maturational movement is largely based on the philosophy of Rousseau, which assumes that the child contains the potentialities of innate goodness, and that when allowed to develop in a protective environment, the child can develop within himself those positive qualities valued by the culture. Innate negative tendencies (if any) possessed by the child may be eliminated by appropriate responses to the child. Kohlberg perceives that the classical Freudian view is based on similar assumptions about the child. In all probability, Gesell, Erickson, and Anna Freud can also be placed into this basic philosophical grouping.

The second major group, Cultural Transmission, finds its philosophical roots in the classical academae and in the writings of Bacon and Newton. Kohlberg asserts that those who hold this view believe that there exists a body of knowledge that must be transmitted, and that there are teachable skills and competencies related to that body of knowledge.

Kohlberg defines the third group, Progressive Developmentalist, as those educators who perceive the child as moving through fixed stages hierarchically arranged within a semi-fixed time period. Dewey serves as the philosophical base, and Piaget (most recently) serves as the descriptor of the stages children master. It seems to us that the key term for characterizing the Progressive Developmentalist group is "transactions." That is, through the processes of assimilation, accommodation and equilibration, the child, who possesses innate cognitive structures, develops those structures by his own actions on objects in the environment. The child "constructs actively his knowledge of the object by making certain assumptions about how objects behave, by trying out these 'hunches,' by rejecting those which are not supported by the facts, and ultimately by devising his own theory" (Piaget, in Gardner, 1973, p. 88).

When using Kohlberg's School of Thought approach, most of elementary and secondary education falls into the Cultural Transmission category. In so doing, some strange bedfellows occur. Within this category are educators who believe that teaching is essentially a matter of applying the appropriate technique (lecture, drill, practice, homework) and, as a result, children master skills. While in the same school of thought there are those educators who maintain that teaching is the providing of appropriate experiences (group discussions, individual research, dramatic play) and, as a result of these activities, children master the processes of thought (classification, measuring, problem solving). Thus, most of American education consists of the cultural transmission of knowledge, but varies on the dimension of how to transmit that knowledge.

Early childhood education also faces similar issues. The curriculum materials or teacher guides available in early childhood centers reveal great similarities in content among supposedly diverse schools of thought. Most early childhood education programs are primarily concerned with the learning of appropriate school behavior and attitudes - taking turns, standing in line, sitting in groups, raising hands, responding to questions, completing tasks - as well as the learning of concept pairs such as "up-down," "in-out," "over-under," "right-left," and the names of objects. Regardless of the philosophy of the program, most teacher guides contain list of concepts to be attained (names of colors being almost universal), self-help skills and some comments about motor, language, emotional and cognitive development.

Further, in most every program, movable floor toys and paints and puzzles can be found, along with climbing apparatus and an outdoor playground. It is in the manner in which the toys and equipment are used for instruction that the programs vary the most. At one extreme, the toy is presented to the child by the teacher, who asks him to identify it. At the other extreme, the child is encouraged to manipulate or play with the toys to "discover" their properties. In addition, major differences exists among educators in the amount of play recommended and the use of small or large group instructional patterns. The point to be made is that our analyses of early childhood programs reveal that there is high agreement on the instructional content and materials to be used; where early childhood educators differ is in the techniques they select to "teach" children.

Thus, as useful as Kohlberg's "schools of thought" seem to be, the critical continuum along which to determine differences among early childhood programs is how the child is perceived as a learner. We propose that this hypothetical continuum ranges from one extreme of those who perceive the child as a passive receptor (behavioristic; the use of drill and small step procedures) to the other extreme of those who perceive the child as the active transactor (the use of discovery or guided discovery). At one end of the continuum we place the behaviorally oriented programs and at the other end, the cognitive developmentalists.[2] We have chosen the term Cognitive Developmental rather

[2] It should be pointed out that there are many types of developmental theorists. There are the traditional age-stage descriptions of Myrtle McGraw, Gesell, Spock, Shirley and Josephine Hilgard. These developmentalists have provided, usually from observations of children, lists of when young children can accomplish skills, such as buttoning a coat, riding a bicycle or cutting with scissors. Educators who have derived programs from these developmentalists suggest that teaching in the main should introduce an activity as near as possible to the time when most children can accomplish the skill involved. However, developmental psychology and proponents of cognitive developmental programs basically claim to have derived their curriculum from a Piagetian point of view rather than from Gesell and the earlier developmentalists.

than Kohlberg's Progressive Developmental because the word cognitive implies a desire by some educators to make inferences about the internal life of the child (i.e., the actions of the brain).

The major differences between the behaviorist and the cognitive developmental positions are in how they: (1) describe the child as a learner on the active-passive dimension; and (2) view cognitive hierarchies, i.e., the behaviorally oriented learning theorist Gagne views the hierarchies to be developed through instruction, and developmental theorist Piaget believes the child constructs his own hierarchies. Further, the cognitive developmentalist deviates most sharply from the behaviorist in the cognitive developmentalist's hypothesis that there are internal, innate mechanisms available for thought.

Mistakenly, the behaviorist and cognitive developmentalist have appeared to differ concerning the efficacy of reinforcement and social learning principles (imitation, modeling, rewards). We believe that this is not a "real" issue, as the cognitive developmentalist uses positive social reinforcement and provides models for imitation. Rather it is in the manner of sequencing reinforcement and the use of primary natural reinforcers that they differ. The cognitive developmentalist appears to have incorporated into his theory (sometimes unknowingly) the basic tenets of behaviorism or social learning theory. Largely, the cognitive developmentalist has used principles of behavior modification as techniques for the technology to enable the developing child to master the specific content of the culture into which he is born (for example, English rather than French). The critical difference between the two theoretical approaches is how much beyond the behaviorist the cognitive developmentalist wishes to speculate about the internal life of the child.

Given the above distinctions between the theories, it should be clear that the major differences in how the theories are translated into practice lie in the nature of the "structure" the teacher is to provide in daily classroom activities, and in the amount of structure.

In our opinion, there has been great confusion and misunderstanding over the use of structure as it applies to a teacher's activity. All early childhood programs that qualify as programs and not as baby-sitting arrangements have some structure. The behaviorist teacher has a highly structured set of lesson plans, specifying goals and objectives for each child. The behaviorist view requires the teacher to structure lessons into small sequential steps. These lessons cover social management as well as concept attainment. Likewise, the cognitive developmental program requires that the teacher highly structure his plans for implementing the program. For instance, rooms must be arranged with the appropriate areas and materials so the child may transact with the environment in such a way as to develop, for example, the concept of conservation (conservation of mass or volume). Teachers are required to be skillful observers and must frequently plan and rearrange the environment based on how a child plays. Where the two approaches differ is in what teachers do during instruction, not in the amount of planning and structuring the teachers engage in before instruction. Too often, we believe, the term structure has been confused with the term authoritarian, or amount of teacher control. Clearly, in the sense used here, structure relates to the degree to which the teacher must plan. Thus, it is proposed that early childhood programs of quite different philosophical and psychological orientations vary more on the dimension of how they perceive the child as a learner than they do in how much structure is required to carry out the program's goals.

So far, we have discussed the two extremes of one continuum. Clearly many programs fall in between. We see what Evans (1971) refers to as "typical" or "traditional" pre-school or kindergarten programs as falling in the middle ground. A typical classroom has pre-planned curriculum, for example, a unit on the school, animals or plants. While teachers are required to plan and set up the environment, this is not done with the same degree of structure as the behaviorist or developmentalist. Learning is predicted by the traditionalist to occur as a result of instruction, but teachers are not required to individualize or attempt to control (be responsible for) a child's mastery of concepts or social skills. To the traditionalist, most children will learn as a result of instruction. Those children who do not progress are said to be "not ready" or "emotionally insecure" or "from a difficult family."

For the purposes of this chapter one program of each type has been selected to represent the ends and middle point of the continuum. At one extreme we have placed the behavior modification groups. We have based our examples on the observations of the Nashville Regional Intervention Program project and the Contemporary School of Education in McClean, Virginia, as well as the work of Albert Bandura, Alice Hayden and her co-workers. For the normative developmental group, we have based our examples on our numerous observations of programs across the country and specifically the senior author's participation in the analyses of over 35 high risk intervention projects during the 1972 year (Stedman, _et_ _al_.). For the descriptions of the cognitive developmentalist group we have been somewhat limited for few if any old "progressive" classes exist[3]

[3] Edith Dowley notes that The British Open School approach bears a strong resemblance to the "progressive movement" which was popular in the United States during the 1920's and 1930's. The teacher in the activity-type schools of Dewey, Kilpatrick and Patty Smith Hill and the British Open Schools as well, walks a narrow line between maintaining control over the curriculum and management of the classroom and allowing children to follow their own interests and

and few programs currently exist which have been adequately derived from Piaget. We have, therefore, drawn what we feel to be reasonable goals in teacher training for anyone who would develop such a program and recognize that these goals may be a strong reflection of our own bias. We present a very tentative grouping of some current examples of each group.

"Behavioristic"	"Normal Developmental"	"Cognitive-Developmental"
High Structure	Medium High Structure	High Structure
Child as a responder	Child is a mediating interactor	Child is a transactor
Bear	Karnes	Kamii
Bijou	Clauss & Gray	Kohlberg
Williams & Sibley (McClean, Va.)	Caldwell	Weikert (New program)
Lindsey	Gordon	Anastasiow , Stedman & Spaulding
Ora & Wiegerink	McCandless, Spicker & Hodges	Bank Street College
Bereiter & Engleman		UCLA
Becker & Engleman		Open Education (English School Variety)

Following are the teacher activities we perceive are to be acquired to meet criterion performance as a teacher for each of the three approaches.

The Behavior Modification Approach

The following is a description of those elements of the theory necessary to understand a behavior modification early childhood educational program. It is of necessity not all inclusive.

The behavior modification classroom approach is based on the premise that the child's skills development is dependent upon the nature of the environment and on a trainer. Environments are comprised of objects, places and persons, or trainers. Trainers are any individuals such as parents, children or teachers

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[3]develop in their own unique ways. One characteristic the "Good" Progressive schools had in common was that the teacher, not the children, was always in charge. Without structure for the teacher, chaos resulted.

who attempt to shape or influence the child's adoption of a behavior. The behavior of children (or people in general) is perceived to be a direct result of training. In other words, all behavior is learned behavior, including such constructs as "friendliness" and "cooperation" as well as easily observable behaviors such as "walking" or "sitting in a chair."[4]

Behavior is defined as all those observable events emitted by a person. All non-observable events such as motives, needs and drives are not acceptable constructs in the theory. Frequently practitioners of behavior theory may draw upon "needs" or "reasons" in hypothesizing how to modify or shape a pupil's performance. However, these are not legitimate aspects of the theory and are perceived to be idiosyncratic features of a trainer's hypothesis making.

Further, of major importance to the theory is the hypothesis that all skills and complex behaviors of people are culturally determined. No innate structures are hypothesized and no internal structures are perceived to be available to the child prior to training. The only exceptions to this principle are the four survival motor mechanisms available to the child at birth: sucking, thrashing, head turning and head lifting. In addition, perceptual abilities in primitive forms are available to process environmental input (hearing, seeing, touching and tasting). Behavior is neither "good" nor "bad." It is culturally relevant in a dimension of its acceptability or desirability.

Children are perceived to arrive at school with some degree of skill development in the areas of motor, socio-emotional, language and cognitive development. A teacher's prime responsibility is to be able to assess where on a continuum of skill development the child is operating. This diagnosis is based on a prior analysis of all skills into their smallest component parts. Each discrete step within skill development serves as a basis for diagnosis as well as a guide to teaching. That is, diagnosing where a child is on a continuum provides the teacher with the basis of determining where to begin instruction. Thus, diagnosis and instructing are integrally related in the behavior modification approach. Each discrete step following the child's current attainment is to be taught sequentially and directly to the child at a pace at which the child can experience success according to a prescribed criterion. Usually the teacher will attempt to provide stimuli so that the child emits responses at a success rate that reaches 80-90% correct within a given lesson.

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[4] Edith Dowley points out that "in one sense this statement could be truly said of all program models." She thinks that the distinction to be made here is that in the behavioristic programs all behavior is "learned-taught" behavior, or all behavior is behavior learned as a result of training and instruction. In other programs behavior may be learned through experience, trial and error, and live or mediated modeling after an admired model's behavior to meet the needs and interests of a particular child.

A reinforcer or reward is to be administered to a child who successfully masters the desired behavior set by the teacher. The primary reinforcer, in the theory, is food. All other rewards, such as social rewards, are perceived to be secondary rewards which are developed through interactions with previous trainers such as parents.

Following the child's response to the teacher's demands (e.g., "Hand me the red cup."), the teacher will administer an appropriate reward previously determined to be reinforcing to the child. A reinforcing condition is said to exist when the child models his behavior or emits the desired response following the presentation of the stimuli and contingent upon the reward. All rewards are provided to the child contingent upon the child's correct response based on a rate predetermined by the teacher as an acceptable criterion performance (e.g., hands teacher red cup four out of five times upon verbal request to do so). Competing responses emitted by the child (non-attentiveness, running away, laughing) are ignored during lessons and natural reinforcers (such as "play") are used as modes of instruction to establish learning sets in children.

Reinforcers are predicted to increase a child's performance of a skill and are basically feedback mechanisms. Punishment, another feedback mechanism, is used only in extreme cases to decrease the appearance of strong negative behaviors (hitting, destroying property).

Once learned, all behaviors are perceived to be possibly emitted under rewarding conditions. Thus, ignoring undesirable behaviors is perceived to extinguish behaviors not culturally appropriate. However, once an extinguished behavior is rewarded it may reappear as part of the child's behavior.

All rewards are established in relation to food, and secondary rewards grow out of the interpersonal relation established between the trainer who administers the rewards and the child. In addition, the child is perceived to model and imitate the trainer in order to secure both primary and secondary rewards. Thus, modeling, imitation and responding to verbal commands are response patterns developed by the child from interactions with trainers.

The subject matter which comprises the curriculum of early childhood classes is all those behaviors and skills deemed important by the culture. These skills include number concepts, concept formation, language development, socio-emotional conformity and growth and, eventually, abstract reasoning.

Future teachers are to be trained under conditions in which basic behavior principles are utilized. Modeling, imitation, feedback and rewards are utilized to shape the teacher's behavior to meet the criterion set by the trainer. Fundamentally, the criterion performance of a teacher is the appropriateness and correctness of the responses the teacher is able to have children emit.

All descriptions of children's or teachers' behaviors are based on data. Relevant data are the number of times the teacher performs a procedure and the resulting number of times a child emits a correct or incorrect response. Of prime importance is that, following training, teachers or children will establish independent rates of emitting desirable behaviors under conditions of self-reward schedules or intermittent trainer-reward schedules.

The behavior modification lesson is a tightly integrated whole in which no one segment may be eliminated without serious damage to the total lesson. Therefore, a minimum lesson includes the following conditions: objectives must be specified based on individual pupil behaviors; feedback in some form of reward schedule must be administered contingent upon pupil behavior indicating correct response; discrete steps in the analyses of tasks must be determined and administered with appropriate materials in appropriate settings; and data must be collected upon which to evaluate the children's and teacher's performance and to plan the next phase of instruction.

The following are perceived to be a minimum set of tasks to be acquired and demonstrated by prospective teachers.

FUNCTION: SPECIFYING INSTRUCTIONAL GOALS AND OBJECTIVES

SKILL: SPECIFIES IN ADVANCE TARGET LEARNINGS OR BEHAVIORS FOR EACH CHILD, BASED ON CHILD'S CURRENT REPERTOIRE OF SKILLS

1.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given verbal description of child's learning stage:	--sequences lesson to demonstrate child's movement towards mastery
--specifies next target learnings	--selects verbal commands to shape pupil's responses

Given chart (data) of behavior of child:

--describes child's level of accomplishment and plans next lesson

Given paper and pencil test:

--defines major tenets such as contingencies, reward, target behavior, feedback

Given hypothetical case history:

--describes procedures to modify child's undesirable behavior and encourages child's desirable behavior

--plans instructional program based on child's current response repertoire

SKILL: SPECIFIES STIMULI TO BE SELECTED WHICH ARE DISCRIMINATIVE FOR COMPETING OR UNDESIRED BEHAVIORS AND PROGRAM CURRICULUM MATERIALS BASED ON CHILD'S RESPONSE REPERTOIRE

1.1.2 indicators

college classroom or learning lab

Given hypothetical case history:

--specifies stimuli

--plans reinforcement schedule based on rewards

Given paper and pencil test:

--describes stimuli with high probability as appropriate for children three to six

--describes curriculum materials with high probability to be suitable for child three to six

microteaching or actual classroom

--sequences lesson to demonstrate child's movement towards mastery

--selects verbal commands to shape pupil's responses

--plans instructional program based on child's current response repertoire

FUNCTION: ORGANIZES ENVIRONMENT AND MATERIALS

SKILL: LOCATES, IDENTIFIES AND ARRANGES INSTRUCTIONAL MATERIAL WHICH INCLUDE PUZZLES, PEGBOARDS, MATCHING CARDS, COLOR CUBE AND FORM BOARDS

1.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given catalog of curriculum material: --selects appropriate material	--arranges environment which includes appropriate instructional material for motor, socio-emotional and cognitive development
Given diagram of hypothetical classroom: --arranges classroom into learning areas containing curriculum materials	--analyzes film of teacher-child in a classroom and lists appropriate material and suggests alternatives

SKILL: ARRANGES CONTINGENCIES SO THAT REINFORCERS FOLLOW ONLY THOSE BEHAVIORS WHICH ARE TO BE STRENGTHENED

1.2.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given paper and pencil test: --lists typical primary and secondary reinforcer	--develops lesson plans based on sequential growth of the child --describes technique used in a film for setting contingencies
Given case history or chart (data) of a child: --sets contingencies of behavior to be reinforced	--demonstrates use of rewards based on child's successful actions

FUNCTION: INSTRUCTS

SKILL: ENGAGES CHILDREN IN PRE-ACADEMIC TASKS WHICH INCREASE ATTENTION SPAN, INCREASES PERCEPTUAL MOTOR SKILLS AND DEVELOPS BASIC REPERTOIRE OF CONCEPTS AND SOCIAL BEHAVIOR SKILLS

1.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given hypothetical case study: --develops lessons for children	--engages children in pre-academic tasks

in motor, socio-emotional and cognitive areas	--increases children's basic concepts
Given paper and pencil test:	--engages children in on-task behaviors (80-90%)
--lists basic concepts to be taught	--eliminates or extinguishes children's off-task behaviors (2-5%)

SKILL: IDENTIFIES RESPONSES WITH THE HIGHEST INDEPENDENT RATE OF OCCURRENCE, REINFORCES HIGH RATE AND DEVELOPS LOW RATE BEHAVIORS

1.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given description of child:	--responds more frequently to behaviors to be reinforced
--describes appropriate reinforcement strategy	--ignores behaviors to be decreased
Given case history of child with high off-task performance (10% running around room):	--uses primary reinforcers such as natural play and social reinforcers such as praise, smiles, hugs
--develops strategy to enable child to conform to classroom rules	

FUNCTION: DIAGNOSES/EVALUATES

SKILL: DEVELOPS SYSTEMS OF DIAGNOSIS AND EVALUATION TO DETERMINE PUPIL'S CURRENT STATUS, APPROPRIATENESS OF INSTRUCTION, PUPIL GROWTH AND THE EFFECTS OF REINFORCER USED

1.4.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given data on hypothetical child:	--collects data on child
--describes child's current status	--modifies program based on data
--evaluates effectiveness of reinforcers	--selects alternative reinforcers based on data
--diagnoses child's level of skill development	--charts child's progress in motor, socio-emotional and cognitive areas
--arranges alternative reinforcer for inappropriate procedures	

Normal Developmental Approach

Historically, early childhood education programs have been developed without the aid of a single, or dominant philosophy. Thus, unlike the behavior modification or cognitive developmental approach, one is hard pressed to identify a single spokesman or group of educators readily identified with the traditional early childhood classrooms. These programs, however, might best be described as prototypes of the "readiness for school," pre-schools, or public school kindergartens. While both the behavior modification and cognitive developmentalist groups also share the readiness goal, both of these extreme groups more readily modify their programs to accommodate idiosyncratic behavior patterns of individual children. This is not to say that the normal developmental programs do not try to meet individual differences. However, the nature of the typical nursery- or pre-school normal developmental program is large- or small-group oriented and focuses on teacher oriented activities to prepare children for formal school, usually first grade.

The normal developmental approach draws upon the field of child development for the basic stock of knowledge about children. This knowledge is usually found in the descriptions of what typical normal children can accomplish in the motor, socio-emotional and cognitive areas of development at certain ages. Thus, age is a critical dimension. For example, the Berkeley Growth and Developmental Scale, the Iowa Scale, Bayley's Infant Evaluation Scale and Caldwell's Pre-School Attainment Scale all have used age as a reference point to assess children's functioning. In addition, most of the widely used intelligence scales use age as the reference point to assess intellectual functioning.

Normal developmental early childhood education was very much influenced by the work of the developmental psychologists Gesell, Shirley, and Hilgard, as well as Lee and Lee, who prepared lists of skills to be accomplished by a certain age. At one point during the 1950's, in-service training was dominated by an age-stage philosophy, and films such as the "Terrible Two's," "Trusting Threes," "Frustrated Fours," were shown to parents and teachers.

An analysis of normal developmental programs today indicates a similar influence of age of the child as the determining variable upon which classroom experiences are built. Curriculum specialists in normal developmental programs have generated long lists of skills to be attained by the child at an appropriate age. Curriculum experiences and materials are selected which are said to reflect child growth and development principles. For example, "a child's ability to button his coat by himself," "tie his shoes independently," "use scissors with ease" are perceived as typical accomplishments of the five- to six-year old. Thus, these skills would be taught in the kindergarten as part of the academic program. Many toy manufacturers, influenced by this philosophy, indicate the age level of the child to which the toy will appeal.

Of major importance in normal developmental programs are those behaviors perceived as necessary for school success. These would include such behaviors as "standing in line," "taking turns," "sitting in groups," "raising hands," "asking and answering questions." Thus, long lists of behaviors assumed to be associated with first grade success have been generated which describe how a child must act. Typically, the lists reflect behaviors of the average first grade classroom, which contains large and some small group instruction. Small group instruction usually is restricted to the area of reading.

Normal developmental programs emphasize those concept pairs thought to be necessary for school success such as "right-left," "up-down," "over-under," "in-out" as well as color names, the concept of number ("you can count things,") the concept of writing ("those marks on the board say your name"), and the concept of reading ("the books contain stories and I can read them"). Again, long lists of skills perceived to be related to academic success (reading, numbers, science) have been generated.

Another major area of emphasis in normal developmental programs is on socio-emotional development. This area is probably the least well developed area of the program if one evaluates the traditonal school on lists of skills associated with emotional growth. Statements as to developing "the whole child," "healthy self-concept," "positive attitude towards self and others" and "positive attitude towards school" are typical examples. In general, emotional growth is assessed by the intuitions of the teacher. The normal developmentalist makes a major assertion that the emotional development of the child underlies his cognitive development, hence is instrumental to school success. Interestingly, those behaviors that the normal developmentalist would assert indicate socio-emotional development are largely ones that reflect conformity to school rules and interest in school related events rather than independence and self assertiveness.

Given the emphases or goals stated above, the normal developmentalist therefore constructs classroom experiences into "units" of work (such as a study of animals or the circus) in which the child can learn how to "act" in school, master the school related concepts and participate in school related tasks. Thus, the term "pre-school" is a very descriptive term of the aim of the normal developmental early childhood educational classroom.

FUNCTION: SPECIFYING INSTRUCTIONAL GOALS AND OBJECTIVES

SKILL: SPECIFIES PROGRAM OBJECTIVES WITH REGARDS TO CHILDREN'S TOTAL DEVELOPMENT

2.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given paper and pencil test: --identifies normal motor, socio-emotional and cognitive achievement levels for 3, 4 and 5 year-olds --writes behavioral objectives for 3, 4 and 5 year-olds	--develops lesson plans which formulate instructional goals and objectives --plans program based on age norms of children

SKILL: IDENTIFIES FEATURES WHICH ARE NECESSARY FOR SUCCESS IN PRIMARY GRADES

2.1.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given paper and pencil test: --describes skills child needs for success in primary grades --lists major components of program including: being able to follow directions, understanding basic concepts, discriminating orally presented sounds and visually presented shapes	--develops lesson plans which include activities to emphasize pre-reading and arithmetic skills --organizes classroom day into motor, socio-emotional and cognitive activities --varies classroom activities

FUNCTION: ORGANIZES ENVIRONMENTS AND MATERIALS

SKILL: DEVELOPS AND/OR SELECTS APPROPRIATE INSTRUCTIONAL MATERIALS, FURNITURE AND EQUIPMENT IN RELATION TO CHILDREN'S AGE, SIZE AND PROGRAM GOALS

2.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a list of available equipment and materials: --rejects superfluous or inappropriate items	Assigned a classroom: --stores away superfluous or inappropriate items

Given access to suppliers catalogs:

- --prepares a budget of $500 with priorities indicated

Given a list of raw materials available in hypothetical teacher preparation room:

- --provides list and/or description of materials teacher will construct with priorities and rationale
- --identifies material for specific lessons

- --orders appropriate supplies and equipment
- --develops and constructs necessary teacher materials which would normally be unavailable
- --selects audio-visual equipment for instructional purposes including tapes, films, records and slides

SKILL: ARRANGES AND ORGANIZES CLASSROOM ENVIRONMENT

2.2.2 indicators

college classroom
or learning lab

Given a floor plan and a list of materials and equipment:

- --draws arrangement and provides rationale

Given access to a preschool equipment resource center:

- --demonstrates competence in use of equipment and materials

microteaching or
actual classroom

Before school opens:

- --arranges environment into interest areas for large and small group activities
- --organizes sequences of experiences with appropriate materials
- --organizes outdoor play area

As school year progresses:

- --rearranges and enhances environment with new materials to stimulate new interest
- --selects sites for age appropriate field trips

FUNCTION: INSTRUCTS

SKILL: CONDUCTS AND IMPLEMENTS COURSES OF WORK

2.3.1 indicators

college classroom
or learning lab

Given assignment to plan 2 weeks specific activities:

microteaching or
actual classroom

Facilitates a varied program and covers the majority of program tasks in motor,

- --provides time allotment for manipulative large muscle sensory-motor activities, social interaction in large and small groups, free play time, and the introduction of curriculum materials

Given taped samples of children's verbalization patterns and situational context:

- --responds with appropriate corrective patterns

socio-emotional and cognitive domains:

- --controls flow of children from activity to activity
- --uses praise to reward pupils achievement and attending behavior
- --encourages children's questions, answering and asking
- --establishes routine that is known to students

SKILL: MODIFIES AND REDIRECTS CLASSROOM EMPHASIS TO ALIGN WITH PROGRAM GOALS

2.3.2 indicators

college classroom
or learning lab

Given information on children which indicates lack of progress:

- --outlines steps for remediation

Given video tape examples illustrating potentially dangerous situations in school-community and/or teacher parent relations:

- --writes or demonstrates alternative teacher actions to resolve problem

microteaching or
actual classroom

- --changes daily program to provide emphasis in appropriate areas
- --establishes remediation groups for appropriate students
- --reacts in corrective fashion to alleviate problems in school community and/or teacher-parent relations

FUNCTION: DIAGNOSES/EVALUATES

SKILL: DIAGNOSES CHILD'S LEVEL OF DEVELOPMENT AND EVALUATES CHILD'S MASTERY OF CURRICULUM

2.4.1 indicators

college classroom
or learning lab

Given appropriate information on several children:

- --classifies children and compares with age norms

microteaching or
actual classroom

- --administers appropriate instruments and evaluates results
- --identifies children with potential problems

--identifies potential problem areas

--suggests means for further investigation and/or remediation

--communicates status of children to parents

--refers children to other agencies or services

The Cognitive Developmental Approach

The cognitive developmental approach is an outgrowth of Deweyian philosophy, Piagetian theory and techniques and procedures of the traditional school.

Basically the cognitive developmentalist assumes that all children go through a series of stages of development. The stages are invariant, sequential, hierarchically arranged and roughly follow the child's age periods. The stages or periods commonly accepted are the sensori-motor (0-2 years of age), pre-operational (2-5 years of age), concrete operations (5-12 years of age) and abstract reasoning (12-maturity). Piaget maintains that the child has available to him at birth innate structures by which he can act on the environment to internalize representations of the environment. As the child "takes in" objects by the process of assimilation, he constructs a model of the world. When the child must revise his construction of the world through new experiences, Piaget maintains the child does so by the process of accommodation. A further process of equilibration is hypothesized to account for a mechanism which provides a motive for the balance between the processes of assimilation and accommodation.

Like Dewey before him, Piaget posits that the child acts on the environment, and the nature of the child's acts provides the material by which the child constructs his own intelligence. Thus, the richness of the environment influences what the child can construct but does not provide the input. The child is the agent of his own experiences. In a less rich or less structured environment, the child will be delayed in his cognitive development, not because of lack of training but due to lack of opportunities to experience.

The actions of the child are fundamental to the theory. These actions are both observable motor acts and unobservable internal acts such as occur in thinking. The child acts on the environment through his physical movements, manipulation of objects, experimenting with objects and the internalization of symbolic representations of the objects which alter his mode of thought. The child is said to learn about the physical nature of the world (the laws of physics, chemistry and causality, as well as time and space) through play, drawing, symbol manipulation and, later through language development and reading.

Kamii (1973) perceives the basic difference between Piagetian approaches and other developmental programs, such as Bank Street College, in Piaget's distinction of how children master knowledge. Whereas both Bank Street and a Piagetian program emphasize the use of free play as a learning device, Kamii believes the Bank Street program is based on the teacher's intuitive notion of how children learn. A Piagetian program, in contrast, makes distinctions among the various kinds of knowledge children master. These types of knowledge are proposed by Kamii as physical, logico-mathematical and social knowledge. Each type requires a different orientation on the part of the teacher.

Physical knowledge is knowledge of objects, shapes, texture, function, action and response to action. These knowledges in the Piagetian view only can be obtained by the child's own actions on objects. It is therefore crucial for the teacher to provide objects for the child to act upon. Social knowledges are those arbitrary symbols or names given to objects, for example, apple. Piagetian oriented teachers are free to supply the name "apple" for the child's mastery of social knowledge of the name "apple" but they would also provide an apple for the child to encounter and experience the physical knowledge of the taste, smell, texture, color and shape.

Logico-mathematical knowledge, for example numbers, is hypothesized to be obtained by the child through his own actions and his curiosity in being interested in finding out how things work. Children are believed to learn how to classify not because they want to learn how to classify but as a result of discovery through experimentation with objects. A teacher in the Piagetian classroom is encouraged to ask children questions which will focus the child's attention on the logico-mathematical properties and provides the vocabulary for relationships and comparisons. Questions such as "Do you think this is more, less, or the same?," "Do you think this is longer, shorter, or wider?" help the child engage in examining the underlying process of the mathematical properties of the environment.

Teachers also will develop materials to engage children in examining, and thereby developing, notions of classification, seriation number, spatial and temporal reasoning, and representation. In general, the sequence of experiences provided by the teacher begins with presentation of the object, then provides a model of how the object is used ('saw with a saw') next allows the child to use the object to discover its properties, finally through questioning procedures the teacher encourages the child to examine the process and underlying properties of the results of his actions ('a board sawed in half is two pieces but is as long as the original board').

Both the Piagetians and the child developmentalist emphasize the socio-emotional development of the child. Piaget and Inhelder (1969) state that the need to be accepted and to express love may be the fundamental need and motivation for all learning. Acceptance of the child is crucial if the child is to feel free to explore. Of major importance to the Piagetian orientation is the allowance of the child to fail. Piaget believes that failure is critical to learning--it is only when the child is wrong in his hypothesis making that he comes to discover and must accommodate new knowledge.

Language development is perceived to be dependent upon the degree of the child's cognitive development. That is, the child only develops language to the degree to which he is able to think in the mode that the language form represents. For example, it is hypothesized that a child is not able to use the "if-then" construction accurately until 12-14 years of age, the time when the child is able to think in abstractions. Language is said to have advantages in thinking over other symbol systems, particularly in its efficiency of categorizing concepts.

Thus, in strong contradistinction to the behavior modificationist, the pure cognitive developmentalist would not teach the child basic concepts but would provide the conditions and materials by which the child can discover (or uncover) the basic operations of the world. For example, Piagetians would maintain you cannot teach a child before 5-7 years of age about conservation of matter; however, by 5-7 years of age most normal children will have mastered the concept.

Ideally, the cognitive developmentalist will try to provide a rich classroom environment and an underlying structure which is appropriate to the child's stage of development. However, the structure is apparent only to the teacher; the child must seek and discover the structure for learning to take place. In Piagetian theory, premature structuring cannot occur, due to the fact that the child is perceived to be unable to form structures before he is at that stage of development.

The cognitive developmentalists do not have a well developed theory of affect development but assert that it is probably fundamental to healthy cognitive functioning. Piaget has proposed a concept of decentration, which is the process of the child's development of a concept of self by the continuous process of learning which aspects of the environment are separate from the self. This, to Piaget, is a lifelong process.

FUNCTION: SPECIFYING INSTRUCTIONAL GOALS AND OBJECTIVES

SKILL: SPECIFIES DEVELOPMENTAL SEQUENCE AND STAGES

3.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given paper and pencil test:	--plans lessons to include broad behavioral domains
--describes levels of cognitive development according to Piaget	--plans activities to include motor, socio-emotional and cognitive growth
--describes sequence and stages of emotional (moral) development according to Kohlberg	--describes goals for children based on stage of development
Given case study of child:	
--describes child's developmental level	

SKILL: SPECIFIES BEHAVIORS ASSOCIATED WITH DEVELOPMENTAL SEQUENCES AND STAGES

3.1.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given paper and pencil tests:	--recognizes stages of development after observing child
--lists child behaviors associated with major stages of development	--recognizes behavioral indicators of normal growth
Given case study of child:	--recognizes behavioral indicators of delayed development
--describes child's level of development	

FUNCTION: ORGANIZING ENVIRONMENTS AND MATERIALS

SKILL: SELECTS APPROPRIATE CURRICULUM MATERIALS TO ENCOURAGE DEVELOPMENT

3.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given paper and pencil test:	--selects stage appropriate curriculum materials - form boards, puzzles, easels, blocks, and so on
--lists appropriate curriculum materials	

--develops games to stimulate development

--develops games to assist in formation of notions of classification, seriation, number, spatial and temporal reasoning

SKILL: ARRANGES ENVIRONMENT INTO WELL DEFINED CURRICULUM AREAS

3.2.2 indicators

college classroom
or learning lab

Given paper and pencil test:

- --describes how to arrange interest centers

Given work floor plan of classroom:

- --draws in interest centers to include science, math, art, music, language and problem solving activities

microteaching or
actual classroom

--provides concrete objects to develop concepts

--provides areas for large and small group and individual activities

--provides area for free play

FUNCTION: INSTRUCTS

SKILL: CONDUCTS A PROGRAM BASED ON CHILDREN'S DEVELOPMENTAL STATUS

3.3.1 indicators

college classroom
or learning lab

Given hypothetical case study:

- --describes activities to stimulate growth
- --lists steps to invite children to participate in activities
- --describes goals in terms of behavioral objectives

Given paper and pencil test:

- --defines physical logico-mathematical and social knowledge

microteaching or
actual classroom

--encourages verbalization

--encourages question asking

--probes for generalization and description of objects

--encourages expression of feelings

--asks questions to focus child's attention on the physical properties of objects

--encourages child's discovery of basic laws

--accepts failure as a natural form of learning

SKILL: MODIFIES TEACHING STYLE TO ENCOURAGE CHILDREN'S DEVELOPMENTAL GROWTH

3.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a case study of two children: --describes children's differential rate of growth and how classroom activities can be adjusted Given a case study of a problem child: --describes means by which child extends awareness of himself	--reinforces verbalization --reinforces children's independent play and exploration --reinforces children's discovery --establishes himself as a resource to the child

FUNCTION: DIAGNOSIS/EVALUATION

SKILL: PROVIDES SYSTEMS OF CONTINUOUS DIAGNOSIS AND EVALUATION OF CHILDREN'S DEVELOPMENTAL ATTAINMENTS

3.4.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given data on hypothetical child: --describes diagnostic tasks to measure development Given case study: --diagnoses strengths and weaknesses	--monitors children's activities --collects data on children's progress --administers evaluation instruments --describes to parents child's progress

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CHAPTER 4

SOCIALIZATION AND CLASSROOM MANAGEMENT

Lawrence J. Schweinhart and Richard L. Turner

In its broadest sense "socialization" includes the efforts of all the institutions and agents of a society to induct children, adolescents and young adults into the society. In a much narrower usage, the term may denote the efforts of a particular institution, the school, and within it, particular agents, teachers, who try to instill in young persons the norms, values and ways of behaving considered appropriate in the society. It is "socialization" in its narrower sense that is employed in this chapter.

Although virtually all of the classroom acts of the teacher involve socialization in one or another of its aspects, the socialization process is undoubtedly most visible in those teacher acts directed toward managing individual and group behavior. How the teacher manages the classroom undoubtedly depends partly on the age of student being taught, partly on the goals of instruction, and partly on the personality and training of the teacher. Each of these factors, together with schools of thought about classroom management, were used by the authors to identify four approaches to socialization and classroom management: authoritative, behavior modification, cognitive developmental, and non-directive.

The above four approaches form a rough continuum concerning their premises about authority in socialization. In an authoritative approach the concern is with assigning tasks to students and making sure that the students perform them. The teacher is the central source of authority in the classroom and the existing institutions and social order are used as guides. At the other end of the continuum is the non-directive approach.

In this approach the concern is more nearly with the overall personal growth of students towards autonomy than with their performance of specific tasks. Students are encouraged toward independence and self-regulation. The teacher is there to help them toward this aim, not to increase their dependence on authority. The goals of socialization and the approaches to it thus shift together, from closely monitored task performance in the authoritative approach to social and emotional growth in the non-directive approach.

The Authoritative Approach

In the authoritative approach, the performance of tasks assigned by the teacher and the discipline imposed by him or her are seen as the best ways to facilitate personal growth. Persons grow by adjusting to the society. Teacher-assigned tasks transmit information about the society to passively receptive students. Thus students become socialized and internalize the values of the society.

The authoritative approach to socialization has deep roots in schooling tradition. Indeed, some (for example, Hudgins, 1969) have argued for its inevitability in the educative process. They point out that, despite the varied emphases of a century of educational innovators, the daily practice of teacher-dominated classrooms has gone on virtually unchanged. Energy is better spent, they argue, to improve or perfect this basic process rather than replace it.

Baumrind (1971), in studies of childrearing, has distinguished authoritarian, authoritative and permissive approaches. She marshals empirical and logical support for the superiority of an authoritative approach, based on expertness, which avoids both the excessive use of punishment that characterizes authoritarianism, and the flight from parental authority that characterizes permissiveness. The strict authoritarian approach has been so often villified and made a straw man in arguments that the word and what it represents cannot escape bad connotations. For that reason it will not be represented here. However, there are many who accept and argue for strong, rational authority. Their approach to socialization shall here be called authoritative.

The authoritative approach is similar to what Kohlberg and Mayer (1972) have called cultural transmission. It is distinguished here from the specific technology of behavior control produced by behaviorist psychology. Its primary origin is induction from existing culture and classroom observation rather than deduction from theory. For this reason, a researcher who is concerned with the simple description of classroom behavior would often be implicitly identified with the authoritative approach to socialization. Such research was fueled initially by the writing of Wright and Barker (1950) and is well exemplified by the research of Kounin (1970), Hudgins and Ahlbrand (1970), or Jackson (1968). This approach, sometimes identified as behavioral ecology, is more a method than a theory. It contributes to the authoritative approach, not because it is theoretically appropriate, but because the behavior which is most often observed is best characterized as authoritative.

FUNCTION: SETS GOALS

SKILL: DEFINES SCHOOL AND CLASSROOM DISCIPLINARY CODE FOR STUDENTS

1.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a verbal description of a school setting:	On first day of school:
--composes list of school rules	--lists school and classroom rules

Given hypothetical assignment to a specified class:

- --composes list of classroom rules

Given film of student classroom behavior and list of rules:

- --identifies instances of student infraction of rules
- --writes out description of how instance may be used to reestablish expectation and clarify rule

- --discusses reasons for rules
- --asks students to explain each rule in own language
- --asks students to give examples of behavior that would break rules
- --posts or distributes written list of rules

At first appearance of infractions:

- --punishes guilty student promptly and firmly
- --reestablishes expectations of all students present

FUNCTION: PLANS ENVIRONMENT

SKILL: ARRANGES THE CLASSROOM TO FACILITATE TASK PERFORMANCE BY STUDENTS

1.2.1 indicators

college classroom or learning lab

Given a list of materials, a description of students, and a classroom floor plan:

- --draws a 'blueprint' of the physical arrangement of the classroom, perhaps annotated with explanations of certain arrangement decisions

Given a varied list of instructional materials and a description of students:

- --selects a given amount of those materials for use with the students
- --verbally indicates reasons for selection or rejection of various materials

microteaching or actual classroom

Assigned a classroom:

- --arranges desks to face teacher and to minimize opportunities for unsanctioned talk, copying and other distractions
- --makes certain each student has needed materials
- --makes extra materials available for students who finish their assigned tasks before other students
- --maintains a stable seating arrangement for students

When familiar with students' behavior patterns:

- --seats potential conspirators in misbehavior at a distance from each other

FUNCTION: INSTRUCTS

SKILL: ASSIGNS TASKS AND ENCOURAGES ON-TASK BEHAVIOR ONLY

1.2.2 indicators

college classroom
or learning lab

By written or vocal response:

- --defines expectations for student behavior on given learning tasks specifically and unambiguously

Given a film or videotape of student misbehavior due to inadequate teacher direction:

- --identifies source of problem
- --writes or demonstrates suggestions for alternative teaching behaviors which resolve the problem

Given a film or videotape of instances of student behavior:

- --selects or constructs teacher responses to on-task and off-task behavior

microteaching or
actual classroom

- --announces expectations of student behavior on learning tasks specifically and unambiguously
- --assigns enough tasks that the majority of students are continually occupied with performance of those tasks
- --praises students with words like 'good' or 'fine', or with a pat on the back, or with the awarding of a privilege, contingent only upon on-task behavior or the successful completion of tasks

In discussion:

- --responds only to those who raise their hands

SKILL: MONITORS CLASSROOM GROUP AND INDIVIDUALS

1.2.3 indicators

college classroom
or learning lab

Given a film or videotape of classroom sequences including different classroom events simultaneously:

- --codes off-task and disruptive student behaviors as they occur

microteaching or
actual classroom

- --answers one student's question while gently turning another student's head back to his task
- --while lecturing, points finger at student who is talking without permission

Given leader position in a discussion group:

--refers to several student responses in one's own vocal response

--intervenes so that only one student is speaking at a time

--notices many slightly disruptive classroom events and does not fail to notice any moderately disruptive event

Ref: Kounin, 1970

SKILL: CORRECTS STUDENT MISBEHAVIOR

1.2.4 indicators

college classroom
or learning lab

Given a role-play simulation:

--the 'students' misbehave in various ways to provoke the teacher and evoke a correction; after several instances the 'teacher's' performance is recalled and discussed

Given a film or videotape including episodes of student misbehavior:

--identifies instances of misbehavior

--selects or constructs appropriate teacher responses to these instances of misbehavior

microteaching or
actual classroom

After a student engages in disruptive behavior:

--talks with student promptly to reestablish expectations or exhibit the teacher's feelings about the misbehavior

--asks student why he misbehaved

--indicates disapproval of student misbehavior so as to minimize further disruption of all students' task performance

--physically restrains, as appropriate

--punishes, as appropriate

SKILL: TREATS OFF-TASK BEHAVIORS IN ACCORD WITH THEIR POTENTIAL CONSEQUENCES

1.2.5 indicators

college classroom
or learning lab

Given film or videotape or verbal description of various student behaviors, and perhaps background information:

--codes behaviors as positive or negative and according to magnitude of consequences

microteaching or
actual classroom

--makes use of school's psychological and counseling services as indicated by a student's behaviors and other facts

--does limited counseling of students as problems appear

--writes out or selects course of teacher action indicated by a type of student behavior-reward, praise, nonintervention, correction, punishment, referral, etc.

Given film or videotape or verbal description of various misbehaviors:

--selects or composes punishments most likely to induce guilt and cause reflection upon the misbehavior

--responds calmly to personal insults

--makes rational judgments in emotional situations

--assigns punishments equivalent in size to the student's misbehavior

Given a student's act of aggression or destruction:

--invents relevant punishments rather than relying on a limited repertoire of standard punishments

--restrains student to prevent further damage

--tells student to apologize to victim

--has student make restitution, give up a prized object, etc.

SKILL: ADMINISTERS CORPORAL PUNISHMENT PROPERLY

1.2.6 indicators

college classroom
or learning lab

--writes essay expressing limited use of corporal punishment in extreme situations, to indicate punishment rather than to injure

Given student's case history and/or film of behaviors:

--reports uses of corporal punishment considered proper and effective

--gives rationale for such uses

microteaching or
actual classroom

When a student is guilty of significant, intentional misbehavior:

--spanks promptly after misbehavior, to indicate punishment rather than to injure

--shakes student by shoulders, as above

--raps knuckles, as above

--uses such punishment infrequently, but does not hesitate when other methods have failed

When teacher is asked views on corporal punishment:

--expresses its use as a tool for task maintenance rather than as a weapon for personal vindication

--expresses reservations and limitations upon its use

FUNCTION: APPRAISES STUDENT BEHAVIOR

SKILL: DISTINGUISHES AMONG ON-TASK, OFF-TASK AND DISRUPTIVE BEHAVIORS

1.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a film or videotape of classroom student behaviors:	--praises students only when they are on-task
--codes student behaviors as on-task or off-task	--reminds students who are off-task but not disruptive by an unobtrusive remark or a touch or a facial expression
--codes student behaviors as non-disruptive or disruptive	--does what is necessary to stop disruptive behavior as quickly as possible

Ref: Bijou, 1972

SKILL: ACCURATELY REPORTS NATURE AND SIGNIFICANCE OF STUDENT'S BEHAVIOR

1.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a film or videotape focusing on a particular student's behavior:	--observes, perhaps keeps running records, of individual student's behavior
--observes and keeps running records of the student's behavior	--reports fairly both good and bad behavior of a student
--summarizes 10 minutes or so of such behavior into a paragraph that is balanced and does not overlook significant behavior	--does not stereotype a student with insufficient evidence
Given a parent-teacher role-play simulation:	Given a private parent-teacher conference:
--praises student when appropriate	--praises student when appropriate
	--mentions criticisms of student if necessary, while maintaining rapport and minimizing defensiveness of parents

--mentions criticisms of student if necessary, while maintaining rapport and minimizing defensiveness of 'parents'

Given an occasion for written evaluation

  --upon request, substantiates any coded symbol with specific behavioral evidence

  --accurately reports in detail a conflict situation and surrounding factors

The Behavior Modification Approach

Behavior modification techniques rest on the premise that behavior is under the control of the environment. It follows that changes or modification of behavior toward desired ends may be brought about through very careful manipulation of those aspects of the environment which most greatly influence behavior. The most critical component of the environment, from a behavior modification viewpoint, is the feedback, consequence or environmental reaction which occurs during or very shortly after a response is made, since these environmental reactions influence the likelihood that the response, or one similar to it, will continue or will be made again at some future time.

A major characteristic of all persons except the most debilitated, autistic or retarded is a continuous flow of behavior toward the surrounding environment. Some of this behavior is viewed by the surrounding society as desirable, some as undesirable, and some as not making much difference one way or the other. The thrust of the socialization process is to decrease the frequency of socially undesirable responses and increase the likelihood of socially desirable responses. What constitutes desirable, 'neutral' and undesirable behavior varies with different cultures, different settings within a culture, and frequently with age and sex.

For a very long time people have generally understood that encouraging or rewarding behavior or arranging for a 'favorable' reaction from the environment increases the probability of the behavior recurring, while arranging no reaction, an unfavorable reaction, or painful or punitive consequence seems to decrease the chances that the behavior will recur. From a behavior modification viewpoint the problem has been that this understanding was general and inexact, led to erratic practices and, for whatever reason, a strong tendency to focus on punishment or aversive stimulation of unwanted behavior while minimizing the reinforcement of desirable behavior. The contribution of the behavior modification approach has been to greatly deepen understanding of how the consequences of behavior influence it, to call attention to the very great importance of paying extremely close attention to behavior if one wishes to modify it, and to point out the skills needed if one is to influence behavior in a precise and systematic way.

FUNCTION: SETS GOALS

SKILL: SPECIFIES BEHAVIORS TO BE MODIFIED

2.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a film or videotape showing student classroom behavior:	Given a microteaching setting with non-peer students who engage in spontaneous behavior
--defines class of student behavior to be modified	--consistently reinforces desired student behavior
--gives specific instances of this behavior from the film	--consistently ignores undesired behaviors
--defines alternative class of desired behavior	--upon request at the end of the session, verbally defines classes of behaviors reinforced during session
--gives specific instances of this behavior as they might appear in film context	

Given a conversation or discussion with supervisor, principal or colleague:*

--describes and gives instances of behaviors of each of several students, which need to be modified, and describes and gives instances of desired alternative behaviors for same students

--breaks specific desired behavior into precursory behaviors; for example, if student is to enter classroom, move to seat, take out book, begin reading, teacher can state this sequence of precursory behaviors which lead to desired behavior

*or given the assignment to write behavioral objectives:

FUNCTION: PLANS ENVIRONMENT

SKILL: ARRANGES ENVIRONMENT FOR CONTINGENCY CONTROL

2.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given assignment to create a lesson plan or a series of lesson plans:	Given elementary classroom:
--identifies materials and instructional resources to be used and orders them to specific lessons or lesson components	--organizes flexible daily schedule so that activity or other 'interesting' periods can be shortened or lengthened as part of contingency management
--organizes lesson or lessons so that variation in stimulus materials over instructional periods may be observed	--develops numerous student resource centers, for example, student library, science center, mathematics game center, attractive to students and available as a consequence of engaging in desirable behaviors

Given elementary or secondary classroom:

--designs and carries out lessons which include many instructional materials, resources, and activities (creates 'stimulus variation') which attract and hold attention of students

FUNCTION: FACILITATES STUDENT ATTAINMENT

SKILL: MONITORS CLASSROOM GROUP AND INDIVIDUALS

2.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
--obtains high score on Schumm's test for 'overlap' behaviors --practices performing two tasks, involving different sensory modalities and different responses, simultaneously or in rapid, alternating sequence, e.g., listening-writing, grading papers-watching film, talking to individual student-monitoring small group	When leading group or observing student activities or individual work: --looks across group frequently --moves to different locations in room --fixes eyes on individual student for close inspection of activity --may move close to student or group to exercise proximity control --observes student facial expressions and movements (head scratching, shuffling, pencil chewing, nail biting) for indication that teacher help is needed or that student may go off-task

SKILL: APPLIES DIFFERENTIAL REINFORCEMENT TO STUDENT BEHAVIOR

2.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given film or videotape of student classroom behavior and given response system for indicating when reinforcement should be given	--spontaneously praises, rewards, encourages desired precursory behaviors and desired behavior states

--reinforces/ignores student behavior with acceptable (e.g., 80%) accuracy

Given typescript of student-teacher verbal interaction with teacher reactions to student responses deleted:

--writes in verbal reinforcers at appropriate times with acceptable (e.g., 80%) accuracy

--ignores undesired behaviors

--stops disruptive behavior and indicates desired alternative behavior

--avoids inadvertent encouragement or attention to unwanted behavior

--avoids infrequent praise of desired behavior while always calling attention to undesired behavior

FUNCTION: DIAGNOSES/EVALUATES

SKILL: IDENTIFIES POSITIVE AND NEGATIVE REINFORCERS FOR INDIVIDUALS OR GROUP

2.4.1

indicators

college classroom or learning lab

Given film of classroom or observation of actual classroom:

--identifies apparently reinforcing stimuli for individual students

Given learning lab with list of reinforcing stimuli available:

--selects and arrays reinforcers as they might appear in classroom

--develops token reinforcement system consisting of array of reinforcers

--lists potential negative reinforcers or means of creating states of deprivation in students

microteaching or actual classroom

Given conversation with colleague, supervisor or parent as appropriate:

--tells how individual student responds to smiles, patting (primary grades), short verbal praise ('That's good', 'Nice job', 'That's right' etc.) and to extended verbal praise,('I like the way you have been concentrating on your math problems for the last half hour.')

--suggests to parent means of reinforcing child

--describes to supervisor activities which students like and will work to participate in

--describes deprivations which students will work to avoid

--describes negative reinforcers or punishments which upset or disrupt individual or group and lead away from positive behavior control

SKILL: COLLECTS BEHAVIORAL DATA AT REGULAR INTERVALS

2.4.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given film or videotape of students in classroom:	After performing 'defining behaviors':
--selects individual student and makes frequency count of desired/undesired behavior	--counts frequency of desired/undesired behavior for individual student to establish 'entry' behavior or baseline
	After initiating instructional procedures:
	--counts frequency of desired/undesired behavior at regular interval, e.g., once per week
	--organizes own time in class so that required assessment or frequency counts can actually be made

The Cognitive-Developmental Approach

The cognitive-developmental approach to socialization has as its primary goal the natural growth of students through their performance of activities. An activity is here distinguished from a task in that an activity is chosen by a student whereas a task is imposed on the student by the teacher. The teacher may and often does aid the student in choosing activities by making certain activities more available, but the teacher never limits the choice to one of either compliance or rebellion, as is true of a more authoritative approach to socialization.

Presently, the theoretical roots of the cognitive-developmental approach are primarily the work of Piaget. He in turn has made use of the insights of other developmental theorists. The major premise is that the child develops naturally towards logic, a proper relationship with the world and other people, and a better basis for moral judgment. Adults should provide children with opportunities to engage in activities matched to their stage of development, but cannot and should not try to accelerate the natural developmental process.

Piaget's contribution to socialization is most direct in his writings on moral judgment (1932). Kohlberg (1963) has provided a valuable extension and supplement to Piaget in his own work on the development of moral judgment. Piaget sees moral development as moving from absolutism to relativism, from obedience to adults to respect among equals. Kohlberg sees moral development moving from completely external, reactive judgments, through external social judgments, to internal cognitive judgments about morality. The difference between these theories is less important than what they have in common: a belief in a fixed sequence of stages and a devaluation of the importance of adult intervention.

These theories imply socialization practices, but are not accompanied by an extensive specification of them. Those who have drawn out practices from these theories have also drawn from other sources. For example, Weikart's demonstration curriculum based on Piaget actually blends theory, cross-cultural transplants (such as the methods used in British schools), and pragmatic inventions of the teachers in the program. Nevertheless, it seems that cognitive-developmental theory offers a firmer basis for a taxonomic category than do diffuse curricular movements which are largely subject to individual interpretation and instances of which may sometimes resemble each other only in that they share common labels.

FUNCTION: SETS GOALS

SKILL: SUGGESTS AND MODELS BEHAVIOR AND ENCOURAGES MODELING AMONG STUDENTS

3.1.1 indicators

college classroom
or learning lab

Given the Minnesota Teacher Attitude Inventory (MTAI) or similar instrument

--scores highly as egalitarian, fair-minded, etc.

On a paper and pencil test:

--demonstrates knowledge of principles and situational determinants of modeling

In a role-play simulation or perhaps a science laboratory:

--suggests rather than orders students to perform activities

--initiates activities alone, then asks other students for help

microteaching or
actual classroom

At beginning of day:

--asks a student what his plans are

--suggests plans or modifications of student's plans

--perhaps has student write out plans

--is occupied with some learning activity when students arrive; asks them to join in

When a student is idle (or perhaps diverted from his original plan):

--teacher suggests that he join the teacher or another student in an activity

--rather than tell a student to do something, the teacher suggests that it be done, then perhaps starts doing it himself

--verbally addresses students as equals rather than subordinates, treats them with respect

Ref: Cook, Leeds, & Callis, 1951

?

FUNCTION: PLANS ENVIRONMENT

SKILL: SELECTS AND ARRANGES THE ENVIRONMENT TO PERMIT STUDENT CHOICE OF ACTIVITIES

3.2.1 indicators

college classroom
or learning lab

Given a list of materials, a description of students, and a classroom floor plan:

- --draws a 'blueprint' of the physical arrangement of the classroom with activity-centers, perhaps annotated with explanations of certain arrangement decisions

Given a description of students:

- --lists locations of potential educational value to students (firehouse, local factories, museums, etc.), and persons in those locations who might instruct students
- --lists wide range of curricular materials for an activity-center, including everyday household items

microteaching or
actual classroom

--does not have desks arranged for large-group instruction alone

--sets up activity-centers (language, science, math, social studies, etc.), consisting of a table, chairs and curricular materials

--exhibits several sets of curricular materials in each activity-center (e.g., a chalkboard, paper and pencils, and books in the language area)

--makes wide range of curricular materials available, including everyday household items

--makes available materials which are matched to the cognitive stages of students and which are demonstrably interesting to them

--organizes and implements field trips to locations of potential educational value (firehouse, local factories, museums, etc.)

FUNCTION: INSTRUCTS

SKILL: ENCOURAGES STUDENT INITIATION AND COMPLETION OF SELF-PLANNED ACTIVITIES

3.3.1 indicators

college classroom
or learning lab

Given a film or videotape demonstrating the cognitive-developmental approach:

microteaching or
actual classroom

--asks student what his plans are

--reminds him of his plans

--makes predictions of probable teacher and student behaviors and student achievement

--expresses feelings on educational value of the approach

In a group discussion:

--asks other students what they think

--does not interrupt a student who is speaking to the group

--praises and rewards those who finish a plan, show a product to the teacher, etc.

When a student is diverted from his original plan:

--asks student for a rationale for the diversion

--praises student who is still implementing a plan so diverted student can see

--reminds student of his plans

SKILL: REDIRECTS STUDENT'S AGGRESSIVE, DESTRUCTIVE OR UNPLANNED BEHAVIOR

3.3.2 indicators

college classroom or learning lab

Given a film or videotape of vignettes of students' aggressive, destructive or unplanned behaviors (perhaps further explained by a narrative accompaniment):

--selects or composes teacher responses to the student's behaviors

--composes hypothetical examples of student misbehaviors and teacher responses to them

microteaching or actual classroom

When two students are fighting:

--suggests to one that he play ball with some other students, or perform some other specific activity

--at elementary level, physically moves an aggressor away from his victim to some physical activity that usually interests him

When a student is destroying materials:

--suggests or shows him the proper use of the materials

--presents other materials, demonstrating their proper use

When a student is engaged in unplanned behavior:

--sometimes, reminds him of his original plan

--sometimes, physically returns elementary level student to original plan site

SKILL: LIMITS A STUDENT'S AGGRESSIVE OR DESTRUCTIVE BEHAVIOR

3.3.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a film or videotape of vignettes of students' aggressive or destructive behaviors:	When a student is engaged in aggressive or destructive behavior:
--selects or composes teacher responses to the student's behaviors	--reminds the student of teacher's and parent's expectations for him --verbally reestablishes temporarily overlooked standards of conduct
--composes hypothetical examples of student misbehaviors and teacher responses to them	--occasionally uses physical restraint, but teacher never uses violence

FUNCTION: DIAGNOSES/EVALUATES STUDENT BEHAVIOR

SKILL: HELPS STUDENTS EVALUATE AND REPLAN ACTIVITIES

3.4.1 indicators

college classroom or learning lab	microteaching or actual classroom
--plans, evaluates and replans own activities; and reports these upon request	--spends some time each day with each student asking him to report what he planned to do, what he did, and if they were not equivalent, how he might modify his plans or behavior tomorrow
Given a film or videotape or verbal description of student activities and accompanying plans:	
--composes outline of interview with individual student at the end of the school day	--ascertains that students have clear plans of what they are doing at any given time, the plans being either written or available for vocal report
--lists changes in plans or activities more appropriate for observed students	--observes students frequently
	--questions or reminds students about plans, when they have been diverted

SKILL: CHARACTERIZES STUDENT'S STAGE(S) OF DEVELOPMENT

3.4.2 indicators

college classroom
or learning lab

Given a film, videotape or verbal description of students performing key tests of developmental stages:

--accurately characterizes each student's stage of cognitive and/or moral development according to a recognized theorist (see references below):

Given a list of materials:

--selects materials and describes their use by a child at a given stage of development

microteaching or
actual classroom

Upon request:

--identifies a student's stage of cognitive development and attendant moral development, as these are described by a recognized theorist (see references below)

--in assessing above characterization, gives evidence of using observable cues and key tests on topics such as conservation or rationale for a resolution of a moral dilemma

--makes available to students materials matched to their stages of development

--makes no suggestion to students to perform behaviors beyond their stages of development

Refs: Piaget & Inhelder (1969); Bruner (1964);
Werner & Kaplan (1963); Kohlberg (1963)

The 'Non-directive' Approach

Among the aims of socialization in American society is the movement of children and adolescents along certain lines of growth: from dependence on adults toward personal independence, from the uninhibited release of impulses toward impulse control, from lack of insight into personal feelings such as hostility, anxiety and frustration toward recognition and interpretation of them, from regulation or discipline by external authority to self-regulation or self discipline. Failure of a young person to make adequate movement along these lines not only suggests inadequate socialization or a failure in student personal growth, but incipient classroom motivation or classroom control problems for the teacher, and in extreme cases, juvenile delinquency or emotional disturbance.

Although various approaches to issues of student mental health, personal growth, and the development of self-regulation have been advocated for the schools, one of the clearest and most durable with respect to skills teachers can actually employ arose at the University of Chicago, beginning with Rogers' Client-centered Therapy in 1944, Axline's Play Therapy, The Inner Dynamics of Childhood in 1947, continuing through the work of John Withall on mental health in the classroom in the 1950's and eventuating as the core set of psychological concepts underlying Flanders' system of classroom interaction analysis.

From the viewpoint of teaching, the premise of the non-directive approach is that each person has the capacity to become more autonomous and self-regulating by learning to interpret his feelings, thereby creating more self control. Put in a slightly different way, just as one learns to recognize and interpret the external environment in order to cope with it, he must also learn to recognize and interpret his internal environment, his own emotions, in order to bring them under control. Denial or repression of the existence of personal emotions blocks personal growth because these mechanisms do not permit feelings to be objectively recognized and dealt with in an effective or reality-oriented way. Under this premise the goals of the teacher, in the area of socialization, are increases in student autonomy and self-regulation. The tasks for the teacher are to establish classroom conditions and employ selected interpretive skills which facilitate student accomplishment of these goals. Their accomplishment, however, is not an easy matter since the schools, and many other institutions in American society, operate in such a fashion that autonomy, self-regulation and attention to feelings are discouraged or suppressed, while dependence on authority and suppression of feeling tend to be rewarded and encouraged.

FUNCTION: INSTRUCTS

SKILL: ESTABLISHES AND MAINTAINS RAPPORT WITH STUDENTS

4.3.1 indicators

college classroom or learning lab

Given a typescript of student-teacher interaction:

- --codes teacher talk as rapport building versus threatening or rejecting

Given film or videotape of pupil-teacher interaction:

- --codes teacher behavior as rapport building versus threatening or rejecting
- --codes Flanders' categories 1,2 and 3, and 6 and 7 with high accuracy

microteaching or actual classroom

- --greets individual students in relaxed way
- --smiles
- --compliments or praises student
- --makes humorous, non-threatening remark
- --solicits student opinion or comment
- --listens to student observation or opinion and encourages expansion
- --makes observation or comment which indicates acceptability of student expression

Avoids:

- --constantly passing judgment on student behavior, dress, friends or family
- --derogating, criticizing student
- --constant frowning
- --carping
- --aloofness, physical withdrawal

--assuming threatening posture

--evaluating student comment or opinion as right or wrong

--rejecting student opinion or comment as stupid or irrelevant

Ref: Flanders, 1971

SKILL: COMMUNICATES EXPECTATIONS CONCERNING BOUNDARIES FOR STUDENT CLASSROOM BEHAVIOR

4.3.2 indicators

college classroom or learning lab

--obtains high score on test for 'overlap' behaviors

--practices performing two tasks, involving different sensory modalities and different responses, simultaneously or in rapid, alternating sequence, e.g., listening--writing, grading papers--watching film, talking to individual student--monitoring small group

microteaching or actual classroom

--makes frequent visual sweep over students in classroom

--moves in classroom space so that proximity to individuals changes

--moves closer tc, possibly touches head, shoulder or back of student about to be disruptive

--at primary or elementary level, intercepts student abusing physical freedom by bodily moving into his pathway

--makes direct eye contact with student and raises eyebrow, frowns or shakes head indicating student should desist

--stops physically aggressive behavior and student interference with activities of others, but may verbally reflect feeling of transgressing person

--praises or calls attention to desired group or individual behavior

	--avoids completely permissive or laissez-faire posture in which behavior boundaries are indistinct
	--avoids applying noticeably different boundaries or curbs to different students

SKILL: RESPONDS TO AFFECTIVE OR FEELING COMPONENT OF STUDENT REMARK OR ACT BY REFLECTING, CLARIFYING FEELING EXPRESSED

4.3.3. — indicators

college classroom or learning lab	microteaching or actual classroom
Given audio or videotape of student verbalizing feelings:	--listens to student comments or remarks
--composes responses which capture and reflect the feeling expressed	--watches student acts, including gestures and facial expressions which accompany speech
	--listens to voice pitch, volume, rapidity
	--lets student complete remark or acts so that relation of feeling to substance is clear, hence avoids interruption of student or unduly rapid interpretation of comment or act
	--solicits student expansion of feeling or emotion
	--nods head up and down, maintains eye contact with student to encourage continuation of expression of feeling
	--verbalizes student emotion in reflecting way: 'You feel a little angry today . . .' 'You don't really want to do what I want you to do . . .' 'You feel a little afraid of that . . . etc.

--stops reflection-clarification procedure if student develops long response latencies, looks away consistently, nervously moves extremities, or attempts to escape by moving away

FUNCTION: DIAGNOSES/EVALUATES STUDENT BEHAVIOR

SKILL: SUPPORTS STUDENT RECOGNITION OF HIS OWN BEHAVIOR OR EMOTIONAL STATE AND SUPPORTS STUDENT VERBALIZATION OF ALTERNATIVES

4.4.1 indicators

college classroom or learning lab

Given audio or videotape of student talking to teacher, e.g., in a counseling session:

--identifies points at which student verbalizes or diagnoses his own state

--identifies points at which student suggests alternative state, goal or behavior

--identifies teacher supportive responses

--if teacher responses are deleted from tape, composes own supportive responses

microteaching or actual classroom

Given classroom conversation or counseling session with individual student:

--in response to student diagnosis of own state, says, for example, 'You seem to understand exactly how you feel . . .' or 'That is a good insight . . .'

--in response to expression of alternative behavior or goal says, for example, 'As you see it one thing you could do is . . .' or 'That is an interesting way to think about what you could do . . .' or 'You have had several good ideas about what you could do, which do you think is best . . .'

SKILL: SHIFTS ATTENTION OF CLASS FROM SUBSTANTIVE TOPIC TO EMOTIONAL TONE OF CLASSROOM AND FEELINGS BEING RELEASED

4.4.2 indicators

college classroom or learning lab

Given audio or videotape or film of teacher and students in class:

--develops informal scale for rating emotional tone or class feeling, gives instances

microteaching or actual classroom

In class discussion at upper elementary or secondary school:

--listens for affective intrusions into students' substantive comments, for expression of emotion attached illustrating feeling tone

--indicates points at which teacher might switch to focus on feelings or on actions revealing feeling

to relevant personal experience

--listens for student expression of excitement, enthusiasm

--listens for student expression of resentment, frustration

--watches for student indications of student tension, smart remarks, put-downs, cuts, embarrassing remarks directed at other students

--watches for excessive competition, many between-student comparisons, especially unfavorable comparisons

Given indicators of tension, resentment, over-competitiveness:

--shifts discussion from substance to feeling, reflects, clarifies apparent class feeling, opens discussion to analysis of reasons for feeling, solicits suggestions for altering class procedures to reduce tension, frustration, over-competition

Given feeling of excitement, enthusiasm, especially at elementary level:

--arranges for student to report or talk about his work, discovery or experience

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Summary of Skills by Approaches to Socialization

Authoritative	Behavior Modification	Cognitive-Developmental	Non-directive
Defines school and classroom disciplinary code for students	Specifies behaviors to be modified	Suggests and models behavior and encourages modeling among students	Establishes and maintains rapport with students
			Communicates expectations concerning boundaries for student classroom behavior
Arranges the classroom to facilitate task performance by students	Arranges environment for contingency control	Selects and arranges the environment to permit student choice of activities	
Assigns tasks and encourages on-task behavior only		Encourages student initiation and completion of planned activities	Responds to affective or feeling component of student remark or act by reflecting or clarifying feeling expressed
Monitors classroom group and individuals	Monitors classroom group and individuals		
Corrects student misbehavior	Applies differential reinforcement to student behavior	Redirects a student's aggressive, destructive or unplanned behavior	
Treats off-task behaviors in accord with their potential consequences			
Administers corporal punishment properly		Limits a student's aggressive or destructive behavior	Supports student recognition of his own behavior or emotional state and supports student verbalization of alternatives
Distinguishes among on-task, off-task and disruptive behaviors	Identifies positive and negative reinforcers for individuals or group	Helps students evaluate and re-plan activities	
Accurately reports nature and significance of student's behavior	Collects behavioral data at regular intervals	Characterizes a student's stage(s) of development	Shifts attention of class from substantive topic to emotional tone of classroom and feelings being released

Concepts Associated with Approaches to Socialization

Authoritative

task
on-task
off-task
disruptive
task performance
authoritarian
adjustment
cultural transmission
disciplinary code
monitoring
with-it-ness
corporal punishment

Behavior Modification

contingency
contingency management
reinforcement
behavior objectives
behavior data
stimulus variation
feedback
aversive stimuli
deprivation
punishment
positive reinforcer
negative reinforcer
mentalistic
observables
extinction
precursory
differential reinforcement

Cognitive-Developmental

moral judgment
cognitive development
stage
cognitive structure
moral realism
heteronomy
egocentrism
autonomy
morality of reciprocity
invariant sequence
redirect
modeling
transition

Non-Directive

self or self-concept
(Rogerian interpretation)
threats to self
denial
repression
classroom climate
accepting feeling
rejecting feeling
reflecting feeling
clarifying feeling
positive regard
empathy
rapport
impulse

CHAPTER 5

TEACHING SKILLS IN ELEMENTARY LANGUAGE ARTS

James D. Walden

Introduction

The complex of things to know and of things to do which face elementary teachers frequently interferes with conscious attempts to improve the quality of teaching. The prospect of external evaluations cause teachers to stiffen on the grounds that we really do not know what good teaching is. Furthermore, they question whether or not the evaluation of teaching actually leads to improvement.

These are troublesome but not insurmountable problems. On the surface, people in all branches of education know a good deal about quality teaching. Certainly most experienced teachers have some sense of the effectiveness or ineffectiveness of what they are doing. Individually teachers know that some techniques work better for them than do others. They know that certain teacher behaviors tend to encourage particular kinds of student behavior. Principals and supervisors make quality statements about teachers and teachers have long made quality judgments of student teachers.

Early efforts to describe teacher effectiveness led to the development of lists of general qualities that characterize the superior teacher. Concepts of competence, compassion, commitment, and enthusiasm appear frequently as descriptors. Attempts to divide these qualities into their component parts resulted in categories of personal qualities, knowledge of subject matter and instructional skills.

These skills have been divided into specific groups by many individuals with special interest in teaching and in teacher preparation. Some of the skills are unique to elementary English language arts instruction.

An important factor that affects the development of a list of teaching skills for teachers of the English language arts is the complex nature of that curricular area. Teachers are expected to provide instruction in spelling, oral language, composition, reading, language study, grammar, drama, literature, creative writing, listening and handwriting. While there is considerable research on the interrelatedness of these areas, instructionally they are frequently treated as discrete subjects. It does not follow that each requires a unique set of skills to be used by the teacher. Thus, it is necessary to establish some parameters for this sprawling and ill defined body of content before a taxonomy of teaching skills can be identified.

The classification system used in this document assumes four major instructional responsibilities: Oral communication, Composition, Reading and Literature, and Language study. These four major divisions allow for the addition of new knowledge, of new systems of language analysis and new techniques of instruction. The long history of this curricular area suggests that a major change in the basic structure of the discipline will not be likely in the near future.

While these four categories must be further divided and defined for purposes of conducting research and for special types of instruction, for purposes of identifying teaching competencies no further delineation appears necessary. Each of the several skill areas of concern to elementary teachers can be located in the four major content subdivisions.

Approaches to Instruction. That all teachers do not subscribe to the same approach to teaching is apparent. Published instructional materials and teacher made materials offer great choice and diversity for the elementary teacher.

Probably no other area of the elementary school program offers the variety found among the materials used in reading instruction. The market is repleat with linguistic readers, basal readers, and phonics readers as well as with a great variety of self instructional and supplementary materials.

When the variety of texts used in teacher education programs, and the variety of instruction materials used in elementary schools are examined, two major teaching strategies seem to emerge. These two strategies are probably never found in their pure form but they do serve to distinguish between and among the teaching skills required to function in an elementary classroom.

One strategy will be called a *deductive approach*. A basic assumption in this approach is that learning is a matter of being told something either orally or by means of the printed page. Rules may be taught in grammar, spelling or phonics and then exercises are provided so that the child may practice the application of the rule.

A second strategy will be called an *inductive approach*. The child is exposed to a variety of experiences with language, and generalizations, where needed, are arrived at by the child.

It is important for purposes of this project to interpret differences in the two strategies through illustrations and examples. The illustrations provided at a later point are subject to the writer's bias and thus each reader may wish to adjust the skills and functions in a slightly different fashion. It is not the attempt of this writer to force teaching skills into unwarranted categories but rather to provide a framework for discussion, and for planning and developing teacher training materials appropriate for preparing teachers for elementary school English language arts programs.

In both strategies included in this discussion teachers will have similar if not identical concerns. Both groups of teachers will include instruction directed toward cognitive and affective goals and both will attempt albeit in different ways, to attend to individual differences of learners. The two groups may even justify the use of their selected strategy on the same argument that what they do is in the best interest of the students.

While most teachers employ a mixture of the two strategies certain characteristics tend to prevail that tip the scales in one direction or the other.

Teaching Functions. Competent teachers employing either of the strategies described may exhibit teaching skills unique to that strategy. Some skills may be unique to any of the four major content divisions described earlier. However, it is more likely to be true that both overlap and uniqueness will characterize the skills defined and discussed in this section.

For each of the four major divisions of oral language, reading and literature, composition and language study the teaching functions have been categorized under four major headings. Discussion will center around those functions concerned with the selection and identification of goals and objectives; the activities involved in planning for instruction; the instructional tasks required of teachers; and the diagnosis and evaluation tasks engaged in by teachers.

	Oral Language	Composition	Reading and Literature	Language Study
Selects goals and objectives				
Plans for instruction				
Instructs students				
Diagnoses, evaluates student or teacher behavior				

Conceptually, the materials contained in this document have been designed with a long range English language arts curriculum in mind. While the content of the paper deals with kindergarten or first grade through eighth grade, an extension beyond these levels is reasonable.

The long range view of the language art curriculum encourages an appropriate balance at every level of the school program. Rather than considering a nine or ten month "piece" of the educational operation, the long range view supports the development of pupil competencies in the total language study. Thus, while one of the major divisions may receive greater attention during a given time in the pupils' program, and while one or more of the teaching functions may be more critical at a given time, all functions and all divisions constitute the rightful concern of the elementary teacher.

This view of the curriculum does place greater composite responsibility on teachers but students going through the educational experiences are less likely to view the isolated segments of language study as void of the adhesiveness required to meet the goals of a total English language arts program.

Precursory Skills and Concepts. In the context of teaching strategies and of teaching functions the competent teacher must know the content to be taught. In most teacher education programs these skills and concepts would be the primary responsibility of the departments of English, Speech, Linguistics, and so on. Skills of literary analysis, literary criticism, and a knowledge of literary history may be prerequisite to successful literature instruction. These skills and concepts are undoubtedly an essential part of preparing teachers but no attempt will be made to discuss them at length in this chapter.

A second order of prerequisites for instruction tend to be more individually oriented. This category focuses attention on the attitudes, interests and behaviors of individual teachers. There is a strong belief on the part of this writer that successful teachers of reading and literature must engage in reading activities as a part of their personal behavior. That composition instruction does not meet expected standards has been associated with the fact that few elementary teachers actually engage in writing activities.

The teachers' attitudes toward and interests in the subject areas he or she is responsible for teaching are assumed to be essential ingredients in a quality instructional program. While these attitudes and interests are referred to at various stages in the remainder of this chapter they will not be given major attention. The concerns of this writer focus primarily upon specific pedagogical skills required as minimal competencies for elementary teachers. In the final analysis the successful implementation of any English language arts curriculum depends upon a composite of skills employed by the teacher.

Organization Described. The remainder of this presentation has been divided into two portions. Part two will describe and discuss the teaching strategies as they apply to the four major divisions. Part three, the most extensive section, will identify, describe and discuss specific teaching competencies for each component and will suggest procedures for assessing those competencies. In this section will appear discussions of the prerequisite skills, attitudes and interests.

To undertake the tasks outlined is in itself presumptuous to say the least. If, however, these materials elicit dialog, provide a tentative service to developers and serve as hypotheses to be tested, the efforts will have been worthwhile.

The Strategy Continuum

English language arts programs do not fit into neat categories. Differences among programs frequently lie in the extent to which particular skills and concepts are stressed, in the administrative arrangements employed, (open classroom, non-graded, etc.) or in the manner in which teachers approach their instructional tasks. While it may be appropriate for some curricular areas to use the idea of a model for discussing instructional approaches, no such quasi-scientific term applies to the English language arts. The ideas and techniques that constitute the English language arts require more adaptable categories and descriptors. For purposes of this discussion the terms deductive and inductive strategies will be used.

Teachers employing a deductive strategy tend to place considerable emphasis on the selection and organization of the content as prescribed by the particular textbook selected for use. The content serves as the foundation of the program. Teachers build from year to year on the content "covered" the previous year. A child is expected to complete his first grade readers in the first grade, his second grade readers in the second grade, and so so.

Skills are taught and paced according to a prescribed curriculum and schedule. A variety of techniques are employed to aid the student in his progress through the curriculum. Grouping practices of different types are employed, auxiliary personnel may serve as tutors or remedial specialists, or summer programs may be used to help students "catch up".

Since each of the content areas has its special set of materials and thus its special sequence and content, the program tends to be fragmented. Students study the various subject areas separately. Spelling, handwriting, reading and writing each has its special time in the daily program and each has its separate place on the report card.

By virtue of the fact that much of the content to be taught has been selected prior to the entrance of the student into the school program and the fact that most of the specific skills have been identified in the content selected, the teacher has fewer unknowns to be concerned with.

The reading habits, skills of social interaction and the variety and quality of the language experiences of the teachers are important and do aid in supplementing the instructional sequence, however, they are less essential than in programs directed by teachers employing an inductive strategy.

Student interests, knowledge and experiences may serve as support for the designed program. To the extent that they can supplement the prescribed course of study, student interests may be used. These interests, however, would not determine the selection of instructional content.

Transition from one level of instruction to the next tends to be based upon meeting established standards. The time of transition is established in advance by the preplanned length of a unit of study, or the predetermined length of a course.

Teachers employing an inductive strategy begin with a knowledge of the students and of the language each student brings with him. The variety and quality of experiences enjoyed by the student prior to entering school provides the basis for an instructional program. From the first year of school teachers build on the vocabulary and on the experiences of the previous year. Since the size of vocabulary and the range of experiences will vary greatly among each group of students, the concept of individual differences governs numerous curriculum and instructional decisions.

Teachers accepting an inductive strategy vary in the emphasis they place on controlling language experiences. Some may assume that the process of self-induction that guided pre-school language learning will continue in school. Others carefully select and group the experiences in an effort to lead students to rules and generalizations inductively.

Vocabulary enrichment, concepts and cognitive processes used by students in oral communication are utilized to their maximum in composition, reading and language study. Thus, new vocabulary would be gained as part of the communication process; phonics generalizations would serve as spelling aids as well as means for decoding written words, and the mechanics of writing would be taught so as to serve as aids to comprehension. Students are encouraged to assimilate and use skills at a pace appropriate for them as individuals. This suggests that the range of differences present when six year olds enter school will increase as the students progress through the elementary grades.

The concept of the "human use of language" plays an increasingly important role in the instructional plans of the inductive teacher. The need to communicate dictates an emphasis on the meaning and clarity of messages to the listener and to the readers. Since the function of language is to communicate, "correctness" and "incorrectness" become relative terms.

Student interests, knowledge and experiences become vital resources in the classroom. The teacher's primary responsibility would be to extend and/or refine those interests. Individual students are both allowed and encouraged to engage in self-selecting and self-regulating behaviors. Literature programs place great emphasis on seeking, self-selecting and self-pacing behaviors of students.

Social interaction is a critical element in these classrooms. The room extends beyond the walls of the school and a variety of types of individuals engage in selected segments of the teaching process.

Transition from one level of instruction to the next is a function of maturation, social interaction and physical development. This concept may frequently be found as a theoretical base for non-graded elementary programs and for some open classroom arrangements.

Few, if any, pure programs of the type described exist. However, given a description of characteristics peculiar to two significantly different instructional strategies it now remains to identify, describe and discuss the specific teaching competencies required for each.

Teaching Competencies

Identifying and describing specific teaching competencies is at best a hazardous and subjective undertaking. During the past seventy five years those persons engaged in the business of preparing prospective teachers and experienced teachers for the myriad of responsibilities that face them have developed strong feelings about the nature of the competencies necessary. Many if not most of those feelings have never been subjected to rigorous testing under controlled conditions. Thus, any attempt to provide a list of minimum essential competencies runs the risk of pitting the writer's prejudices against those of the reader.

Out of genuine concern for including as many tentative skills as possible and perhaps out of fear of alienating a segment of the reading population, writers of materials on the topic of teaching competencies have tended to be exhaustingly thorough. Such thoroughness is essential if we are to clearly define the total teaching experience. These long lists serve a much needed function for teacher educators and for those who seek to further professional knowledge through research.

The materials presented in this publication have been prepared in an effort to identify a list of minimum competencies as a guide for developers of teacher training materials. That additional competencies may improve the quality of teaching can not be denied. That acceptable standards of instruction can obtain without the use of the identified competencies appears to this writer to be highly unlikely.

Basic to the materials which follow is the assumption that, in the final analysis, what students learn is the central criterion against which to judge any instructional program. Whatever the teacher does or says is without consequence unless worthwhile changes in the learners follow. Thus, any analysis of teaching skills must carry with it directions for assessing the impact on students. Some of the assessment techniques are crude and need refinement. Taken separately, none of them may be of significant value. A composite of techniques suggested should allow the user to make both quantitative and qualitative judgments about the teacher's effectiveness.

Competencies for Oral Language Instruction. Discussion of the oral language segment of English language arts programs has been selected as a first priority area not only because of its vital role in language instruction, but also for its significance in the total in-school and out-of-school experiences of learners.

For the kindergarten-primary teacher most instruction must rely heavily on the spoken word. Research evidence emphasizes the fact that students who possess the most adequate oral vocabulary tend to be the best achieving students as measured by academic tests and by school grades. Because of the verbal nature of most classroom activities, ability to use language is essential to student success.

All teachers involved in oral language instruction must possess certain precursory skills and concepts related to oral communication. While these skills and concepts are essential now, current emphasis on oral communication created by the technological explosion in mass communication suggests that an even greater need will be recognized over the next fifty or more years.

The initial set of skills relate to the use of the teacher's voice. To effectively control the volume, pitch and rate of speaking and reading increases instructional effectiveness. One theory of language learning places great stress on the teacher as a model for students to emulate. Secondary English programs may be more likely to emphasize the imitative concept as characterized by the teacher who supports the idea of classical speaking and writing. For them and for all teachers, effective voice use becomes a particularly important part of instruction.

All language arts teachers but especially teachers employing a more inductive approach must be familiar with the range of methods and materials of modern mass communication. One responsibility of all teachers includes the transmission of knowledge. The content of public communication constitutes an essential and growing part of the knowledge generated during this period of history. Thus, knowlege of radio, film, t.v., records, tapes, video tape, telephone and the computer constitutes an essential portion of the English language arts teacher's background.

Further, the attitude of teachers toward all public communications affects the instructional program. An open attitude that allows for sampling, examining, analyzing and conscious assessing of modern mass communication forms the foundation for oral language instruction.

Teachers are more likely to gain knowledge and skills required if they participate in public communication activities. This participation may be formal, as in involvement in community radio or t.v. presentations. It may be an informal relationship as in preparing audio tapes or video tapes for in-class or personal use. By either standard active participation appears to be essential.

Other important prerequisites for teachers of oral language include a large useable oral vocabulary, a knowledge of the history of the English language and a knowledge of one or more theories of language learning. While the extent of knowledge required in these areas may differ for teachers at various grade levels, no grade level is eligible for complete omission.

A competent teacher should be familiar with the concepts dealing with learning and student development as they relate to language learning. The ability to relate the theories as described in the literature to the students present in the classroom is a critical step in the teaching-learning process. Knowing where a child is in relation to the expected level of achievement results in more meaningful instruction.

Prior to the time students enter the classroom teachers must attend to a variety of tasks. Included among those tasks is the selecting and designing of instructional goals and objectives. While the nature of the objectives selected or designed may vary between the deductive and inductive teachers, the process of selecting and designing objectives would be common to both groups. Competencies selected to fulfill the minimum requirements in this category are of two types: those concerned with gathering information to help in determining the goals, and those that deal specifically with goal selection and construction.

Classroom teachers should be able to:

1.11 Identify various speech patterns of the community.

1.12 Assess community expectations as reflected in school policies and school curriculum guides.

1.13 Select defensible overall instructional objectives.

1.14 Generate defensible overall instructional objectives.

1.15 Sequence the objectives.

SKILL: IDENTIFIES VARIOUS SPEECH PATTERNS OF THE COMMUNITY

indicators

college classroom or learning lab	microteaching or actual classroom
Given tapes of selected speech patterns:	Given an opportunity to visit with groups of students and adults in the community:
--identify the major vocabulary, syntactic pronunciation patterns	--identify the major vocabulary, syntactic and pronunciation patterns

This skill can be tested in any setting in which the patterns have been assessed by experts from that area and their results are used as a key for checking student assessments.

Student identification should take into consideration:

- --size and variety of the oral vocabulary
- --speech sounds patterned within words
- --the way in which words are patterned or put together to make phrases, clauses and/or sentences

SKILL: ASSESSES COMMUNITY EXPECTATIONS AS REFLECTED IN SCHOOL POLICIES AND SCHOOL CURRICULUM GUIDES

indicators

college classroom or learning lab

Given curriculum guides for a school and written school policies:

- --lists the critical factors to be taken into account in preparing and/or selecting instructional objectives

This skill can be tested by comparing a list prepared by students against a list prepared by college classroom teachers and school administrators.

Student responses should take into consideration:

- --information on grading and reporting procedures and policies
- --information on instructional scope and sequence

microteaching or actual classroom

Given an opportunity to visit with school principals and other administrators and given an opportunity to read curriculum guides and school policies:

- --lists the critical areas and factors to be taken into account when preparing the instructional objectives

--information on uses of various standardized tests

SKILL: SELECTS DEFENSIBLE OVERALL INSTRUCTIONAL OBJECTIVES

indicators

college classroom or learning lab	microteaching or actual classroom
Given goals and objectives prepared by others, such as professional groups, curriculum guides, etc., select goals and objectives appropriate for given elementary program. Selection should:	Given information from a real school situation and given opportunity to weigh prepared objectives against school policies and school curriculum guides, selects defensible overall instructional objectives. Selection should:
--take into consideration student characteristics identified through oral language assessment --take into account school objectives as stated in curriculum guides as in school policy --relationship of oral language skills to other areas of the language arts	--same as at left
The general skill can be tested in a situation in which the teacher is provided with a range of goals and objectives from which to choose. This would probably work best as the culmination potion of an assignment dealing with an instructional problem in oral language teaching.	

SKILL: GENERATES DEFENSIBLE OVERALL INSTRUCTIONAL OBJECTIVES

indicators

college classroom or learning lab	microteaching or actual classroom
Given information about the language patterns in a community and information about the	--same as at left

schools expectations:

- --prepare a set of goals and objectives for teaching lessons in oral language

Criteria for assessing this skill are the same as the ones listed above.

SKILL: SEQUENCES OBJECTIVES

indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of oral language objectives for an overall program in language development:	--same as at left
--sequences the objectives in a meaningful and realistic manner	
Assessment criteria should include:	
--recognition of language acquisition information	
--relationship of skill to other instructional goals at elementary level, (i.e., reading instruction and writing instruction.)	
--knowledge of factors that influence language growth	

Plans for Instruction. Competencies appropriate for this second of four main functions fall into two groups. The first group includes the planning for teaching and consists of four specific tasks. While each of the tasks is necessary for quality instruction they will assume greater or lesser prominence depending upon the strategy employed by the teacher. The teacher using primarily the deductive approach may devote a minimum amount of time to identifying the available community resources to be used in the instructional program. These resources may be a more integral part of the program directed by the teacher who employs the inductive strategy.

Methods of planning for individual differences will differ markedly for these two teachers. The type and variety of instructional equipment deemed necessary to meet the objectives and indeed, the objectives themselves, will be different. However, the fact that the extent of emphasis varies with the teaching pattern employed does not negate the need for attending to these competencies.

Classroom teachers should be able to:

1.21 Prepare and select a range of instructional activities.

1.22 Identify community resources appropriate for use in meeting instructional objectives.

1.23 Prepare and select appropriate instructional equipment and materials needed to meet the long range goals.

1.24 Match activities and materials with specifically identified cognitive and affective goals.

SKILL: PREPARES AND SELECTS A RANGE OF INSTRUCTIONAL ACTIVITIES

indicators

college classroom or learning lab	microteaching or actual classroom
Given a list of instructional objectives and access to textbooks, activity books and curriculum materials:	--same as at left
--prepares and selects a range of instructional activities	
Assessment criteria should take into account:	
--appropriateness of activity for both objective and age of student	

--vocabulary development, syntactic development and phonic development in the range of activities

SKILL: IDENTIFIES COMMUNITY RESOURCES APPROPRIATE FOR USE IN MEETING INSTRUCTIONAL OBJECTIVES

indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of instructional objectives and a visual (film or slide) description of a community:	Given a set of instructional objectives and a visit to the community, identifies the resources appropriate for meeting instructional objectives.
--identifies the resources appropriate for meeting instructional objectives	Assessment criteria as at left.
Assessment criteria should include:	
--appropriateness of resource to age of students	
--accessibility of resource	
--consistency of the resource with instructional objectives	
--efficient use of the resource	
This assessment can be made by rating the list prepared by the teacher against a list prepared by an expert in the area.	

The second group of competencies relate to the preparation of the classroom environment. The physical requirements for effective instruction will obviously differ for students at different age levels, and according to the nature of the instructional program. Knowledge of instructional objectives and of the nature and variety of anticipated activities should assist the teacher in interpreting the competencies listed below. Further, these same competencies apply to instruction in other segments of the English language arts program and thus, will not be discussed again. It is necessary to consider some management skills in the oral language portion of the program as there are numerous opportunities for different types of student activities and equipment. Without specific instruction for teachers there is a strong likelihood that the oral language program will become a silent activity.

Classroom teachers should be able to:

1.25 Establish learning centers which accommodate daily activities.

1.26 Develop systems for keeping records of pupil progress.

1.27 Arrange instructional equipment for most efficient use.

SKILL: ESTABLISHES LEARNING CENTERS WHICH ACCOMMODATE DAILY ACTIVITIES

indicators

college classroom or learning lab	microteaching or actual classroom
Given a list of objectives and a description of the instructional equipment to be used:	Given a real or simulated classroom, a list of activities and the instructional equipment needed for instruction:
--illustrates or describes a group of learning centers to accommodate the activities prepared under an earlier skill exercise	--arranges the room into learning centers appropriate for the goals, objectives and activities earlier prepared
Criteria for assessment include:	Assessment criteria as at left.
--location that will allow students to talk outloud without disturbing other students	
--easy accessibility for younger students	
--centers to take into consideration the wide variation of oral activities (i.e., puppets, listening to records, pantomime, listening to stories, two and three people conversations)	

Assessment can be made by a skilled teacher looking at the illustrations and/or descriptions. A set of slides taken in schools with good learning centers might also serve as a criterion measure.

SKILL: DEVELOPS A SYSTEM FOR KEEPING RECORDS OF STUDENT PROGRESS

indicators

college classroom
or learning lab

Given academic and demographic data on several students and given tapes of oral language of those students:

- --develops a system for recording oral language progress

Criteria for assessment should include:

- --recognition of techniques for assessing oral language skills, (i.e., vocabulary growth, syntactical growth, and phonic improvement)
- --techniques for collecting oral language samples to use for analysis

This skill can be assessed by comparing the teacher product with the plans suggested in authoritative studies on oral language development

microteaching or
actual classroom

Given a group of elementary students and the objectives for the oral language program:

- --organizes a system for recording oral language progress

Assessment criteria as at left.

SKILL: ARRANGES INSTRUCTIONAL EQUIPMENT FOR MOST EFFICIENT USE

indicators

college classroom
or learning lab

Given a list of goals and objectives for a specific grade level and given a list of

microteaching or
actual classroom

Given a collection of equipment and the instructional goals for a given grade level:

equipment to be used in the instructional program:

- --arranges equipment for most efficient use.

Criteria for assessment should include:

- --consideration of the location so as to be easily accessible relative to student age and class size
- --consideration of the location of electrical outlets in the classroom
- --consideration of the proximity of students to equipment being used
- --arranges the equipment for instruction

Self assessment could be made as the teacher uses the equipment in an instructional program.

Instruction. The instruction function includes competencies related to motivating students as well as to instructing them. Extremes in employing concepts of motivation range from belief in self-motivation to a belief in motivation through fear. As perceived in this presentation, motivation consists of more than a series of isolated teacher activities that frequently appear on lesson plans. Rather it is a method of operating in the classroom so as to constantly stimulate and sustain activity. The isolated activity concept has resulted in students who learn how to read, but seldom read; who learn how to speak but seldom speak before a group; and students who learn how to write but seldom do so.

An assumption in this presentation is that since motivational properties of incentives are acquired, they vary greatly from student to student and from situation to situation. Among the incentives which affect student learning must be included the physical conditions of the room as well as other factors previously listed in the earlier portions of this discussion.

Three minimum motivational competencies seem necessary.

Classroom teachers should be able to:

1.31. Identify motivational strategies appropriate for individuals in the class.

1.32 Identify and provide reinforcement for desired student behaviors.

1.33 Use praise and constructive criticism effectively.

1.34 Assist learners in determining appropriate directions and activities to achieve learning objectives.

SKILL: IDENTIFIES MOTIVATIONAL STRATEGIES APPROPRIATE FOR INDIVIDUALS IN THE CLASS

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be taught in a classroom or in a microteaching situation.	Given a group of students and a list of suggested motivational strategies, identify specific strategies appropriate for specific students: --consistent with theory of motivation --consistent with objectives of the course --consistent with personal interests and attitudes of students

SKILL: IDENTIFIES AND PROVIDES REINFORCEMENT FOR DESIRED STUDENT BEHAVIORS

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be assessed in an actual classroom or in a microteaching situation.	Given a group of students and identified student behavioral outcomes (i.e., oral language behavior): --reinforces desired behaviors

The criteria should include:

--changes in pronunciation, vocabulary growth and sentence structures

SKILL: USES PRAISE AND CONSTRUCTIVE CRITICISM EFFECTIVELY

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be assessed in an actual classroom or in a microteaching situation.	Given a group of students in an instructional situation: --uses constructive criticism and praise effectively Criteria for assessment should include consideration of the objectives, of instruction and the motivational strategy appropriate for students.

SKILL: ASSISTS LEARNERS IN DETERMINING APPROPRIATE DIRECTIONS AND ACTIVITIES TO ACHIEVE LEARNING OBJECTIVES

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be assessed in a microteaching situation or in an actual classroom.	Given a group of students: --assist in determining the activities necessary to achieve learning objectives Criteria for assessment should include: --consideration of relationship between objective and learning activities --explanation of the learning objectives --consideration of the source of objectives

Seven specific instructional competencies are listed for the oral language segment of the English language arts program.

Classroom teachers should be able to:

1.35 Select and prepare instruments and practices for assessing students' entry language behavior.

1.36 Identify differences between the speech patterns used in the classroom and those expected at the developmental level represented by the students.

1.37 Use information gained in 1.35 and 1.36 to select and prepare specific instructional objectives for individual learners.

1.38 In light of his/her knowledge of theories of language acquisition, select and/or design appropriate instructional strategies for meeting objectives.

1.39 Adjust instructional techniques and materials in light of student progress.

SKILL: SELECTS AND PREPARES INSTRUMENTS AND PRACTICES FOR ASSESSING STUDENTS' ENTRY LANGUAGE BEHAVIOR

indicators

college classroom or learning lab	microteaching or actual classroom
Given an audio tape of student(s) and access to an instructional materials lab, student will: --identify and use instruments and practices useful in describing syntactic, lexical and phonic strengths and weaknesses of students Criteria should include consideration of: --ability to distinguish between the three major oral language concerns --ability to identify strengths and weaknesses --ability to use appropriiate instrument for the task described	The same criteria and procedures can be used here with the addition of real students rather than tapes of students.

The preceding skills can be compared with the ratings of skilled teachers.

SKILL: IDENTIFIES DIFFERENCES BETWEEN SPEECH PATTERNS USED IN THE CLASSROOM AND THOSE EXPECTED AT THE DEVELOPMENTAL LEVEL OF THE STUDENTS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a tape of students from various age groups, have students rate the tapes from youngest speaker to oldest speaker. Criteria should take into account: --accuracy with which student can make identification --criteria student uses for making his judgments, (vocabulary, etc.) Given tapes of students all from the same grade level: --identify the nature of speech deviations from the expected developmental level These skills can be rated by a skilled teacher or group of teachers who establish the guides.	The same criteria and procedures can be used here with the addition of real students rather than tapes of students.

SKILL: USES INFORMATION GAINED IN PREVIOUS SKILLS AND IDENTIFIES AND/OR PREPARES SPECIFIC INSTRUCTIONAL OBJECTIVES FOR INDIVIDUAL LEARNER

indicators

college classroom or learning lab	microteaching or actual classroom
Given knowledge of a specific student's speech pattern and the expected speech behavior at that level: --prepares an instructional objective for that learner	The skill can be included in the regular classroom; the teacher can be observed in his/her attempts to select specific objectives for a given student.

Criteria should include attention to:

- --relationship between the objective and the nature of speech weakness noted
- --relationship of the objective and the developmental level of the student

SKILL: ADJUSTS INSTRUCTIONAL TECHNIQUES AND MATERIALS IN LIGHT OF STUDENT PROGRESS

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be taught and assessed in an actual classroom.	Given a group of students in oral language instruction: --adjusts the instructional materials and techniques used --uses students' progress to determine type of change required --uses stated objectives in making the decision

Diagnoses and evaluates student behavior. As the distinction between diagnosis and evaluation is sometimes confused, a brief discussion of the two concepts appears to be in order. Diagnosis as used in this discussion refers to the process of studying symptoms and of trying to determine the cause or causes of learning problems in order to adjust instruction. Thus, the decisions to be made and the data gathered for making those decisions tend to focus on individual learners and on causes of learner problems.

Evaluation is concerned with measuring changes resulting from instruction. To measure growth or change, both groups and individual data may be necessary.

Base-line data from which to assess change is required. Most frequently both teacher-made and standardized tests are used as the basis for assessing growth.

The three competencies identified consider both diagnosis and evaluation.

Classroom teachers should be able to:

1.41 Identify and/or prepare appropriate techniques for assessing growth in oral language skills.

1.42 Identify and/or prepare instruments for diagnosing lexical, syntactic and phonic difficulties.

1.43 Administer and score diagnostic instruments and interpret the data from those instruments.

SKILL: IDENTIFIES AND PREPARES APPROPRIATE TECHNIQUES FOR ASSESSING GROWTH IN ORAL LANGUAGE

indicators

college classroom or learning lab	microteaching or actual classroom
Given a series of audio tapes of oral language samples from one student and a collection of tests and techniques to choose from: --select those most appropriate for assessing growth in oral language.	--same as at left
Criteria should take into account: --specific types of growth to be measured	
The assessment of this skill can be conducted by an expert in evaluation or in oral language.	

SKILL: IDENTIFIES AND/OR PREPARES INSTRUMENTS FOR DIAGNOSING ORAL LANGUAGE DIFFICULTIES

indicators

college classroom or learning lab	microteaching or actual classroom
Given access to test file and textbooks on testing, students should be able to identify, and select published tests suitable for diagnosing oral language problems.	--same as at left

SKILL: ADMINISTERS, SCORES AND INTERPRETS THE RESULTS OF INSTRUMENTS SELECTED FOR IDENTIFYING ORAL LANGUAGE DIFFICULTIES

indicators

college classroom or learning lab	microteaching or actual classroom
Given a student and a test, administer the test, score and interpret the results. Criteria should consider: --the type of test and the skills to be tested --accuracy of administering and scoring test --relationship of the interpretation to the type of test and the objectives for the program These skills can be assessed by one who is an expert in testing or in oral language instruction.	--same as at left

Competencies for Language Instruction

Following upon a strong oral language program, elementary students need some scientific language information if they are to make effective use of that language as a medium for sharing experiences. Not only does the information aid in some of the performance skills, i. e., reading and writing, but more significantly it is necessary if one is to understand and therefore appreciate non-standard language variations.

If teachers are to help students learn to use and value their language, selected precursory skills are essential. While the extent to which a teacher may be required to understand linguistic principles varies with the age of the students he or she teaches, effective instruction must be built upon a knowledge of the history and geography of language. Further, the teacher must have a working knowledge of at least one system of language analysis and its accompanying vocabulary and concepts.

For the teacher of reading, linguistic knowledge provides a source of insights for solving various reading problems. Traditionally, reading methodology has concerned itself with the psychological problems and with visual perception, it has not concerned itself with the language the student is trying to perceive. Students begin to read and write from a base of their native speech. Regardless of dialect, of vocabulary, of syntactic variation, that speech is the base of operation. The move from oral to written language can be made easier for students if the teacher understands the language and the forces that have shaped the speech patterns of the community.

Building on many competencies listed in the oral language section a limited number of new tasks have been identified. Thus, the tasks should be considered as additional to the ones discussed in the previous section of this chapter. It is left to the reader to make content specific adjustments for some competencies. For example, 1.21 in the Oral language section calls for the ability to identify community resources appropriate for meeting instructional objectives. Obviously the community resources appropriate for meeting instructional objectives in language study are likely to be different. However, the ability to identify community resources should be transferable from one content area to another.

Planning procedures, materials and learning environment. One competency peculiar to the language study area has been added to those discussed in the oral language section.

Classroom teachers should be able to:

2.20 Select and prepare appropriate instructional materials for teaching specific language skills.

SKILL: SELECTS AND PREPARES APPROPRIATE INSTRUCTIONAL MATERIALS FOR TEACHING SPECIFIC LANGUAGE SKILLS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a list of skills and a selection of curriculum materials: --selects and/or prepares appropriate instructional materials for teaching those skills. Evaluation criteria should take into account: --the instructional level of the materials and of the students for whom materials are intended --the interest level of the materials selected	--same as at left

Diagnoses, Evaluates Student Behavior. Two additional competencies dictated by the unique nature of student expectations in spelling, grammar, and language study programs, involve using instruments designed to assess achievement. The importance of viewing these competencies in the context of the goals and objectives of a school program can not be over emphasized. Not only the content and techniques of instruction but also the evaluating instruments must be determined by the objectives established.

Classroom teachers should be able to:

2.41 Identify and prepare appropriate techniques for assessing growth in grammar, usage, and language study.

2.42 Interpret results from teacher made and standardized achievement tests in grammar, usage and language study.

SKILL: IDENTIFIES AND PREPARES APPROPRIATE TECHNIQUES FOR ASSESSING GROWTH IN GRAMMAR, USAGE AND LANGUAGE STUDY

indicators

college classroom or learning lab	microteaching or actual classroom
Given instructional objectives and a selection of standardized instruments:	--same as at left
--selects appropriate ones for assessing specific objectives.	
Criteria should consider:	
--relationship of items to skill to be assessed	
--relationship of instrument to objectives	

SKILL: INTERPRETS THE RESULTS FROM TEACHER-MADE AND STANDARDIZED ACHIEVEMENT TESTS IN GRAMMAR, USAGE AND LANGUAGE STUDY

indicators

college classroom or learning lab	microteaching or actual classroom
Given a standardized or teacher-made test:	--same as at left
--interprets the results	
Criteria should consider:	
--instructional decisions to be made (i.e., approach to instruction, material selection, and so on)	

Competencies for Reading and Literature

The reading portion of the elementary program often constitutes the bulk of the instructional effort. While literature has consistently been left out or given very little teacher attention in the past, this does not constitute an argument for continuing that practice. The treatment of these two topics together should also serve to emphasize the interrelationship between the two areas.

A first prerequisite for elementary teachers includes familiarity with a wide range of books available for students. This would include books on various topics and reading levels. Further, teachers should know the literature of literary criticism as well as the skills of that art. To successfully teach literature, knowledge of literary history and literary appreciation is essential. This knowledge should aid teachers in understanding the theoretical principles required to study literature as an art.

Competent elementary teachers must also demonstrate an interest in their own reading activities. If students are to apply the reading skills taught to them the teacher must be able to help them transfer those skills to other materials. The transfer can best be made by teachers guiding the interests of students to the range of available books and related materials.

Unless one defines reading simply as the recognition or identification of the words represented by the printed symbols, it is evident that only a summation of the skills listed in the four major content areas of the English language arts will result in a quality program. Undoubtedly the most difficult task in teacher preparation programs is determining how to present the skills in a way that stresses the interrelatedness of all of them.

Selecting Instructional Goals and Objectives. In addition to the competencies identified in the oral language program two additional competencies have been added for the reading and literature segment.

Classroom teachers should be able to:

3.11 *Describe* the nature of the reading process.

3.12 *Specify* instructional goals for reading and literature instruction.

SKILL: DESCRIBES THE NATURE OF THE READING PROCESS

indicators

college classroom or learning lab	microteaching or actual classroom
Given access to textbooks on teaching reading: --describe orally or in writing the nature of the reading process Criteria for assessment should include consideration of: --the interrelatedness of oral language to reading --the role of physical maturity to reading success --the range of approaches to reading instruction	--same as at left

SKILL: SPECIFIES INSTRUCTIONAL GOALS FOR READING AND LITERATURE INSTRUCTION

indicators

college classroom or learning lab	microteaching or actual classroom
Given access to materials for reading instruction: --selects instructional goals for students at various grade levels	This skill can be assessed by the same procedures as in the other context as well as by comparison with existing goals in a given school.

Criteria for assessment should include:

- --sequence of skills
- --prerequisite skills for instruction
- --relationship of reading skills to other language skills

Instruction. In addition to the skills discussed, teachers should be able to:

2.31 Effectively read and tell stories and poems to students.

2.32 Select and/or prepare appropriate instructional materials for teaching specific reading skills.

2.33 Select and/or prepare instructional materials for linguistically different learners.

2.34 Identify various skill sequences of materials commonly used in reading instruction.

2.35 Identify or construct a variety of activities used in teaching specific reading skills.

2.36 Design strategies for differentiating assignments and activities within a classroom.

SKILL: EFFECTIVELY READ AND TELL STORIES AND POEMS TO STUDENTS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a collection of stories and poems, have students read them. Criteria for assessment should include: --voice control --pronunciation and enunciation skills --ability to attend to marks of punctuation	Given a collection of stories and poems, the teacher reads to class. The same criteria as at left should apply.

SKILL: SELECTS AND/OR PREPARES APPROPRIATE INSTRUCTIONAL MATERIALS FOR TEACHING SPECIFIC READING SKILL

indicators

college classroom or learning lab	microteaching or actual classroom
Given a list of reading skills and a collection of instructional materials:	--same as at left
--selects and/or prepares materials for teaching each skill	
Criteria should include consideration of:	
--level of instruction required (i.e., introduction of skill, remedial instruction and so on)	

SKILL: SELECTS AND/OR PREPARES INSTRUCTIONAL MATERIALS FOR LINGUISTICALLY DIFFERENT LEARNERS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a description of a linguistically different reader:	Given a linguistically different reader:
--selects materials appropriate for teaching selected skills	--selects materials appropriate for teaching selected reading skills
Criteria should include:	
--consideration of nature of linguistic difference (i.e., dialect, vocabulary, syntax, and so on)	
--developmental level of the learner	
--difficulty level of material	
--interest level of material	

SKILL: IDENTIFIES VARIOUS SKILL SEQUENCES IN MATERIALS COMMONLY USED IN READING INSTRUCTION

indicators

college classroom or learning lab	microteaching or actual classroom
Given sets of reading texts: --identifies the variety of skill sequences commonly used Criteria should consider: --use of linguistic text books --use of basal readers --use of phonics texts	--same as at left

SKILL: IDENTIFIES OR CONSTRUCTS A VARIETY OF ACTIVITIES USED IN TEACHING SPECIFIC READING SKILLS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a list of reading skills: --selects or constructs a variety of activities used to teach those skills Criteria should include: --various approaches to teaching the skill, (i.e., oral presentation, paper and pencil activities and so on)	--same as at left

SKILL: DESIGNS STRATEGIES FOR DIFFERENTIATING ASSIGNMENTS AND ACTIVITIES WITHIN A CLASSROOM

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be assessed in an actual classroom.	Given a group of students with a

range of skill strengths and weaknesses:

--designs strategies for differentiating assignments and activities

Criteria should include:

--grouping procedures

--individual assignments

--independent activities

Diagnoses, Evaluates Student Behavior. An integral part of reading and literature instruction involves the identification of specific reading problems. That identification allows for adjustments in instruction designed to improve student achievement.

Classroom teachers should be able to:

3.41 Identify and prepare appropriate instruments and techniques for assessing reading interests of students.

3.42 Administer and score informal reading inventories.

3.43 Gather information concerning students from observation, formal and informal testing.

3.44 Interpret information gathered for an evaluation of student progress.

SKILL: IDENTIFIES AND PREPARES APPROPRIATE INSTRUMENTS AND TECHNIQUES FOR ASSESSING READING INTERESTS OF STUDENTS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a selection of instruments and materials in a learning lab: --selects or constructs an instrument for assessing pupil reading interests	--same as at left

Criteria should include:

--individualized techniques

--concern for levels of student development

SKILL: ADMINISTERS AND SCORES INFORMAL READING INVENTORIES

indicators

college classroom or learning lab	microteaching or actual classroom
Given a completed test or a student and a test to be completed: --administers and scores test This skill should consider: --directions given in the test manual --developmental level of the student	Given a test and a student: --administers and scores test

SKILL: GATHERS INFORMATION CONCERNING STUDENTS FROM OBSERVATIONS, FORMAL AND INFORMAL TESTING

indicators

college classroom or learning lab	microteaching or actual classroom
This skill can best be tested in the other context.	Given a classroom of students and the task of preparing a study of particular students: --gathers information using observations and formal and informal tests Criteria should include: --use of a variety of instruments

--appropriateness of technique for developmental level of students

--time involved in gathering the information

SKILL: INTERPRETS INFORMATION GATHERED FOR AN EVALUATION OF STUDENT PROGRESS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a collection of data about student(s):	Given a group of students in a classroom and given data from skill discussed above:
--interprets that data for a student progress evaluation	--interprets the data for a student evaluation
Criteria should include:	The same criteria and technique as at left can be employed in assessing this skill.
--baseline student data	
--goals of instruction	
--student capacity	
--growth toward instructional goals	

Competencies for Composition Instruction

The fourth and final major area of the English language arts complex serves as the area for the integration of all the other components. While a teacher or student may be learning about oral communication, language or literature, he or she is actively engaged in the process of composing. To compose one must rely upon his knowledge and experiences with language, literature and communication and use that knowledge to organize his or her ideas and to communicate them to others. Thus, composition teachers must be more versatile and more knowledgeable than teachers working with any one of the other three segments of the program.

Precursory Skills, Knowledge and Concepts

Composition teachers must have the precursory skills identified for the other areas along with knowledge of the verbal art forms, i.e., ballads, lyric poems, essays, short stories and so on. Knowledge of the range of verbal art forms must include considerable involvement in the composing process. Without that involvement and without continued development of their own potential as verbally creative people, composition teachers must resort to giving assignments and passing judgment on the products of those assignments. No teaching occurs between the assigning and the judging.

Finally, the teacher must be able to identify strengths and weaknesses in verbal compositions if he or she is to provide instruction for young writers.

Three specific and unique competencies have been identified to complete the minimum requirements for instruction in the English language arts.

Instruction

Classroom teachers should be able to:

4.31 *Design* an instructional unit in creative composing for a variety of verbal art forms.

4.32 *Identify* activities and experiences designed to encourage verbal composing.

4.33 *Design* an instructional unit to teach specific mechanics of writing skills.

SKILL: DESIGNS AN INSTRUCTIONAL UNIT IN CREATIVE COMPOSING FOR A VARIETY OF VERBAL ART FORMS

indicators

college classroom or learning lab	microteaching or actual classroom
Given a verbal art form and a library of prose and poetry:	--same as at left
--designs an instructional unit in creative composing	

Criteria for assessment should include consideration of:

- --model of that art form
- --appropriateness of the art form for students of selected developmental levels
- --nature of written product expected
- --verbal and visual instructional materials
- --criteria for assessing the art product

SKILL: IDENTIFIES ACTIVITIES AND EXPERIENCES DESIGNED TO ENCOURAGE VERBAL COMPOSING

indicators

college classroom or learning lab	microteaching or actual classroom
Given access to instructional materials and the instructional objective:	--same as at left

- --identifies activities and experiences designed to encourage verbal composing

Criteria should include:

- --reference to concept of motivation as discussed in oral language instruction
- --use of a variety of techniques employing real and simulated experiences
- --opportunities for written, oral, and visual composing

This skill can be assessed by an experienced teacher of composition.

SKILL: DESIGNS AN INSTRUCTIONAL UNIT TO TEACH SPECIFIC MECHANICS OF WRITING SKILLS

indicators

college classroom or learning lab	microteaching or actual classroom
Given the developmental level of a group of students and given specific skills:	--same as at left
--designs an instructional unit to teach the skills	
Criteria for evaluation should include:	
--attention to the prerequisite for the skill to be taught	
--relationship of the skill to the composing process	
--variety of stimulus materials employed (i.e., visual, oral and so on)	
--opportunities to practice the skill in a meaningful context	

Diagnoses and Evaluates Student Behavior. Evaluating student writing and identifying strengths and weaknesses in those writings have been difficult for elementary teachers. The usual procedure has included an over-emphasis on identifying only the mechanical problems. Because composing is a communication process an additional dimension is required of competent teachers.

Classroom teachers should be able to:

4.41 Identify strengths and weaknesses in student compositions.

4.42 Assess growth in composing.

4.43 Interpret student growth in reporting to students and to parents.

SKILL: IDENTIFIES STENGTHS AND WEAKNESSES IN STUDENT COMPOSITION

indicators

college classroom or learning lab	microteaching or actual classroom
Given a selection of student compositions: --identifies strengths and weaknesses Criteria should include: --clarity of presentation --selection of vocabulary --variations in sentence patterns --relationship of product to developmental level of student --appropriateness of genre employed (i.e., prose, poetry and so on) --mechanical skills used, (punctuation, spelling and so on)	--same as at left

SKILL: ASSESSES PUPIL GROWTH IN COMPOSING

indicators

college classroom or learning lab	microteaching or actual classroom
Given a series of compositions prepared by the same student: --assesses the growth or change in his/her composing skills	--same as at left

Criteria should include attention to:

- --change in quality of idea presented
- --change in vocabulary selection
- --change in sentence length and complexity
- --change in use of mechanics of writing
- --variety of genre used in composing

Conclusion

The tasks of an elementary teacher of the English language arts are broad and complex. The skills identified and described constitute a minimum list for preparing competent teachers. Considerable work needs to be done in establishing a priority for the skills listed and for testing teacher competence against student growth. The preparation of these materials has again emphasized the need for more indepth study to improve teacher preparation programs.

CHAPTER 6

SOCIAL STUDIES TEACHING SKILLS

Lee H. Ehman and Ronald L. Van Sickle

Introduction and Rationale

Professional education for social studies teachers must have goals and objectives. What are these ends? What are alternative means by which they might be accomplished and evaluated? These questions seem basic for social studies teacher education. We hope to suggest tentative answers to the *ends* and *evaluation* questions.

The National Council for the Social Studies (NCSS) has provided general statements which bear on these questions. *Standards for Social Studies Teachers*, a 1971 Position Statement of NCSS, contains prescriptions for the goals and means of social studies teacher education. Earlier, very broad "Guidelines for the Preparation of Social Studies Teachers" were published in the October, 1967 issue of *Social Education*.

The present document aims to suggest answers to the questions in a more specific fashion than has been the case before. Instead of referring to courses and credit hours to be taken, specific trainable teaching skills, as well as the settings and criteria for evaluating such skills, will be suggested.

In addition to specificity, another difference between this and other such statements lies in the presentation of several different teaching approaches or strategies. Most specifications of teaching skills are related to either a single teaching approach, or no specifiable approach at all. We have organized this document around the hypothesis that different teaching approaches imply somewhat different, although partially overlapping, sets of skills. Therefore, we list separate sets of skills for each of the four approaches which we have identified as basic to the social studies field. In this way we have tried to avoid the highly questionable assumption, taken by some teacher education programs, that there is only one approach, or no approach at all, to teaching social studies.

This document, then, is aimed partly at teacher educators. In the growing field of teacher training materials development, an ordering of needs in the field is necessary for intelligent selection of materials to be developed. Finally, researchers of teacher performance, too, may find this array of statements useful in ordering their inquiries.

The document is organized into three sections. First, the theoretical framework within which teaching skills will be cast is explained. Descriptions and examples of both dimensions of this framework--teaching functions and approaches--are given, and the categories for each dimension are developed and compared. Second, the teaching skills, together with suggested evaluation criteria, procedures, and settings are listed within each of the four approaches. Skills that are the same for all approaches are set forth in a separate common skills section. Third, a section on prerequisite conceptual understanding, knowledge, and experience will briefly describe important teacher characteristics which fall outside the general description of skills.

This attempt at listing social studies teaching skills is designed to set forth a set of basic skills necessary for effective teaching performance in elementary and secondary school levels. But it is obvious that neither a definitive nor an unchanging list will ever be possible. We have tried to capture the field as completely as possible in our conceptual net, defining enough skills so as to give broad coverage, yet few enough so as to avoid overwhelming the intended reader with thousands of discrete skill statements. We hope that the users of this document will offer criticisms and suggestions which might be used to improve it.

Theoretical Framework

The statement of teaching skills, to be useful, must be ordered within some sort of framework. The framework used here contains two dimensions. The first dimension is that of teaching functions. Figure 1. depicts this dimension as including four categories; setting goals and objectives, planning, instruction, and evaluation. Each of these has subcategories. The second dimension involves teaching approaches, which represent different overall goals and strategies for teaching social studies. Four categories on this dimension are shown in Figure 1 and include exposition, structured inquiry, unstructured inquiry, and social participation instruction.

The two-dimensional matrix formed in Figure 1. has cells that suggest somewhat different sets of skills for a particular teaching function category across instructional approaches. For example, classroom instruction involves different skills for an expository approach as compared to an unstructured inquiry approach. However, some skills are common to all approaches, and comprise a subset of general skills in teaching social studies.

Other dimensions could be added to the simple framework presented in Figure 1. For instance, schooling levels (primary, upper elementary, middle school, high school, or developmental levels,) might form a third dimension. Other dimensions have not been used in this chapter because the framework has been deliberately drawn to be as general and simple as possible.

	Social Studies Teaching Approaches			
Teaching Function Categories and Subcategories	I Expository	II Structured Inquiry	III Unstructured Inquiry	IV Social Participation
A. Setting Goals and Objectives 1. Selection 2. Invention and statement 3. Sequencing 4. Justification				
B. Planning 1. Instructional procedure selection 2. Sequencing 3. Materials preparation a. Adoption b. Adaptation c. Invention				
C. Classroom Instruction 1. Motivation of students 2. Procedure performance				
D. Evaluation 1. Student diagnosis 2. Formative and summative evaluation 3. Evaluation of unintended student outcomes 4. Evaluation of teaching performance				

Figure 1. Matrix of Social Studies Teaching Function Categories and Teaching Approaches.

Social Studies Instructional Function Categories

The teaching process has been analyzed into four functions for purposes of skill cataloging. Setting goals and objectives, planning, instruction, and evaluation form the major function categories.

1. Setting goals and objectives. Because a body of already-stated goals and objectives exists in the social studies field, selection from among these is one task teachers should be able to perform skillfully. Also, unique circumstances, new curricula, or personal wishes of teachers might dictate the invention and statement of original goals and objectives. Finally, psychological, logical, philosophical, and cultural justification of goals and objectives is important if the teacher is expected to perform relevant, coherent and consistent instruction.

2. Planning blends (a) subject-matter mastery; (b) awareness of and ability to locate materials and resources from the disciplinary fields of study, educational publishers, libraries, media and the various institutions in a community and in all levels of government; and (c) the ability to select and sequence instructional procedures.

Instructional procedures selection refers to the teacher's ability to pick, from the range of available means, those most appropriate to achieve instructional goals and objectives.

Sequencing. Within specific instructional approaches described below, sequencing instruction is necessary to maintain the coherence of the approach.

Materials preparation involves adoption, adaptation, and invention of materials used in teaching. Adoption refers to using already-developed materials which are part of some curricular package, either in textbook form, or part of a kit or simulation. Adaptation involves selecting, modifying, and sequencing already-existing materials in a new way as part of the teacher's instructional plan. Invention means the creation by the teacher of materials which did not exist before.

3. Instruction means structuring a learning environment such that students engage in activities that will result in their achievement of the curricular objectives and goals. For sake of simplicity, this task category has been subdivided into motivating students, and performing the planned instructional procedures aimed at facilitating student learning.

4. Evaluation. Diagnosis, formative and summative evaluation of intended student outcomes, and evaluation of unintended student outcomes are student-oriented evaluation tasks required of competent social studies teachers. In addition, the teacher should be able to evaluate his or her own performance against well-grounded standards established by research in the teacher behavior field.

Diagnosis of students refers to establishing preinstructional levels of knowledge, intellectual skills and abilities, such as reading, attitudes, values, etc., as well as postinstructional determination of the cause of any difficulties the student encounters with learning, social adjustment, reading, etc. Formative evaluation is student-focused evaluation of the process and outcomes of any unit of instruction which is carried out as instruction progresses, rather than after the end of instruction. Summative evaluation is carried out after instruction is completed, and provides a final measure of how much the students learned or changed, and provides no remedial opportunities.

Evaluation of unintended student outcomes has been pointed out by Popham, (1973), as a crucial teaching task which is largely ignored in teacher education today. If teachers should be accountable for the intended outcomes of schooling, then they should likewise be accountable for unintended, and sometimes negative, outcomes brought about by their professional actions. Dislike of school, particular subjects, or adult authorities in general are perhaps the most obvious examples of such unintended outcomes. Low self esteem, rebelliousness, dulled creativity--these are even more serious possibilities, and are sometimes pointed out by popular writers as significant, if unintended, outcomes of schools.

Evaluation of teaching performance involves skills required of professional teachers. Enough is known about linkages between teaching behavior and student learning outcomes to make this a profitable endeavor, even though much more research in this area needs to be done. (Ehman, et al).

Social Studies Instructional Approaches

Four approaches to teaching social studies have been selected for use in this catalog. They are:

1. Expository
2. Structured inquiry
3. Unstructured inquiry
4. Social participation

The idea of organizing this work around the idea of discrete approaches germinated from Joyce and Weil's Models of Teaching, (1972). Instead of the many social studies teaching models, or the four groups of models which Joyce and Weil present, this work has used another ordering of the models which is believed to be representative of the social studies field as it is today. Each of the four categories--actually a generalization of one or more existing discrete models set forth in Models of Teaching, or elsewhere--is explained below.

1. Expository instruction. This approach involves the presentation by the teacher of the facts, concepts generalizations, theories, etc., which students

are expected to learn. In general, it involves the teacher as an intermediary between the scholars of a field of social study such as History who generate conclusions in that field, and the students, who are to learn these conclusions in some form. Utilized in this approach might be such instructional procedures as lecturing, recitation, use of audio-visual materials such as films, and student reading of textual material.

An example of expository instruction involves a teacher who decides that students should know that there is, in general, a direct relationship between voter age and voting rate. The teacher might present the generalization, and then the tabular data which support it. The process with which the supporting data were gathered might also be explained. Finally, the teacher might draw the implications of this generalization to some social phenomenon, such as the eighteen year old vote, to highlight the generalization's social significance and to enhance students' recall of it.

2. Structured inquiry instruction. This approach involves channeling students' activities so that they proceed through some or all the inquiry elements relating to a problem which an historian or social scientist has already completed. The basic idea is to lead students through inquiry, enabling students to generate, independently, conclusions similar to those of the scholar. In general, the intellectual problems to be inquired into and the elements of the inquiry are selected by the teacher, thus the term 'structured inquiry'.

Taking the substantive example involving voting, we can illustrate the structured inquiry approach. A teacher using this approach might decide to engage students in answering the question: What is the relationship between voter age and rate of voting in national elections? After clarifying the question, the teacher might lead students through a data collection, manipulation, and interpretation process similar to that used by political scientists who have studied that question. The data might be contrived, taken from extant surveys, or collected in polls conducted by the students. The expectation is that students will reach conclusions similar to those drawn by the political scientists. These conclusions, the content of the approach, are as important as the inquiry process.

3. Unstructured inquiry. This approach involves the teacher in non-directively assisting, rather than directing, students' inquiry into intellectual problems which, in many cases, the students themselves have selected. The problems and inquiries may or may not have been taken up previously by scholars. Thus, the approach is much more open-ended and the results less predictable than in the structured inquiry approach. The students choose their own inquiry strategies, and rather than teach the students elements of a predetermined inquiry model, the teacher encourages student experimentation and recognizes possible failure in the use of particular strategies.

As an example, students might express general interest in the question: why do the youngest voters (18 - 21 years old) have the lowest rate of voting of all ages groups in the American electorate? The question is perplexing because an examination of the 1972 presidential election results has shown that, contrary to commonly voiced predictions, the 'youth vote' had little apparent effect on the election outcome. Further inquiry showed the low voting rate of the 18 - 21 year old group. The students hypothesize several possible reasons for the low voting rate, and break up into groups, each one checking out one or more hypotheses. Thus, the teacher arranges to have one group examine voter registration records for the county, another group conducts interviews with political candidates on the question, another polls adults of different age groups, and so on. The groups report, evidence is weighed and interpreted, and tentative conclusions are drawn, along with their implications.

In this example, the question, inquiry process, data sources, and conclusions may or may not have precedents in political science. The emphasis is not on replicating the process and knowledge, but on having students experience and value independent social inquiry.

4. Social participation instruction. In this approach the teacher structures a learning environment such that students engage in activities that will result in their adequate performance of social participation skills. Preparing students to participate effectively and fully in social life (e.g., family life, marriage, occupations, higher education, politics, economic consumption, etc.) is the principal goal in this approach. Students learn techniques and strategies of acting in interpersonal situations in order to achieve their own social objectives. The approach emphasizes 'doing' rather than 'knowing' or 'finding out'. The latter are aspects of other instructional approaches. Social participation instruction must provide both direct and vicarious experience in acting purposefully in groups. Students cannot only 'study' social participation if they are to learn to participate--they must act as well.

To apply our substantive example about voting to this approach we can imagine a teacher who decides with his or her class that the students should be able to influence the political process through voter registration rates of young voters. By means of the other instructional approaches, the voter registration process is studied. Then, by means of social participation instruction, a young voter registration campaign is organized. City and county officals are contacted, costs and benefits of group activities for individual participants and the group are determined, group activities are designed, organized, and scheduled, leader-follower roles are defined and carried out, appropriate decision-making processes are utilized, information is effectively disseminated given the group's communication structure, and problems are identified and solved with appropriate problem-solving strategies. The effectiveness of the campaign can be established by subsequent examination of the voter registration data.

Comparing and Contrasting the Approaches

The four approaches were selected for use in the catalog because they provide a conceptual framework broad enough to include the full variety of specific social studies instructional models represented in the field today. The fit of any one specific model into only one of the four general approaches might be awkward or impossible, as some models might include a blend of two or more of the approaches described here, and one approach may span more than one model. But for the purpose of an analytic framework within which to generate statements about teaching skills necessary for different social studies teaching approaches, the four chosen here seem useful for their range, simplicity and clarity of differentiation.

The four approaches are different, and can be conceived as representing points on several dimensions. We have selected five dimensions as convenient means of comparing and contrasting the four instructional approaches.

The first comparative dimension involves the student's role in each approach. The expository approach views the student as a more or less passive receptor of already-generated conclusions. The structured and unstructured inquiry approaches involve the student as an active investigator into intellectual problems, and are at about the same point on the student role dimension. The social action approach has the student participating in his or her own social world outside of the classroom or school.

Student autonomy, the degree to which a student has control over what is learned and how it is learned, defines another comparative continuum. The expository approach is lowest on this dimension, with unstructured inquiry falling at the high end. The remaining two, structured inquiry and social action, fall between these.

A third dimension might be labelled subject-student centeredness. This involves the extent to which the approach is primarily concerned with teaching the subject or with teaching the student. Here the exposition and structured inquiry approaches seem clustered on the subject-oriented end, while the unstructured inquiry and social action approaches are grouped on the student-oriented end.

Another dimension is 'content coverage'. This refers to the relative amount of subject matter--material to be learned and remembered--dealt with in a unit of class time. In a sense, it is an efficiency dimension. The expository approach certainly is on the high end of this dimension, since the whole purpose of that approach is to cover comprehensively the conclusions of an area of study. Structured inquiry is close to but not at the high end, because even though somewhat inefficient coverage-wise, this approach deals with some predetermined content. At the low end are both the unstructured inquiry and social action approaches. Any 'coverage' of a predetermined body of knowledge in either of these approaches will be unpredictable, incidental and largely unintended.

Finally, there is a continuum involving the intended use of knowledge in each of the approaches. With the expository approach, the knowledge is organized and remembered, enhancing the general intellectual development of the student. With both structured and unstructured inquiry, the intention is that students will remember both conclusions and the methods of inquiry used to generate knowledge. There is an additional and very important aim that students will be able to apply knowledge of the inquiry process to new social problems that might be encountered later, in and out of school. With the social action approach, the knowledge is not important for its own sake, as is generally true with the other three approaches, but rather is useful only as it is applied to effective social participation. Thus, knowledge of the structure of local government is not intended for intellectual comparison with other governmental structures, but as a basis for action to influence the local political process.

The various comparative continua and approach positions on them can be summarized as in Figure 2.

No teacher would be expected to use only one of these approaches exclusively in teaching social studies. Rather, a teacher might well use all four approaches at various times in a school year, a unit, or even in a single day. Appropriate and effective orchestration of these approaches in a teacher's work seems to be a reasonable criterion of his or her professional competence.

Ratings of the relative worth of the approaches is not intended here. Each has its strengths and weaknesses, and each has distinctive purposes and features which make its use appropriate in particular situations.

Common Skills

Introduction

Skill statements in three of the four function categories--objectives, planning and evaluation--are general enough to be applicable to all four instructional approaches. These common skills will be stated in this section to avoid redundancy. Instructional skill statements will be made for individual approaches in separate sections. In some cases, an approach might include unique additional skills or amplification of the statements made in this common section.

Throughout the skills sections, a three-digit identification system is employed. The first digit refers to the instructional approach, with 0 for the common section, 1 for expository, 2 for structured inquiry, 3 for unstructured inquiry, and 4 for social participation. The second digit refers to the function,

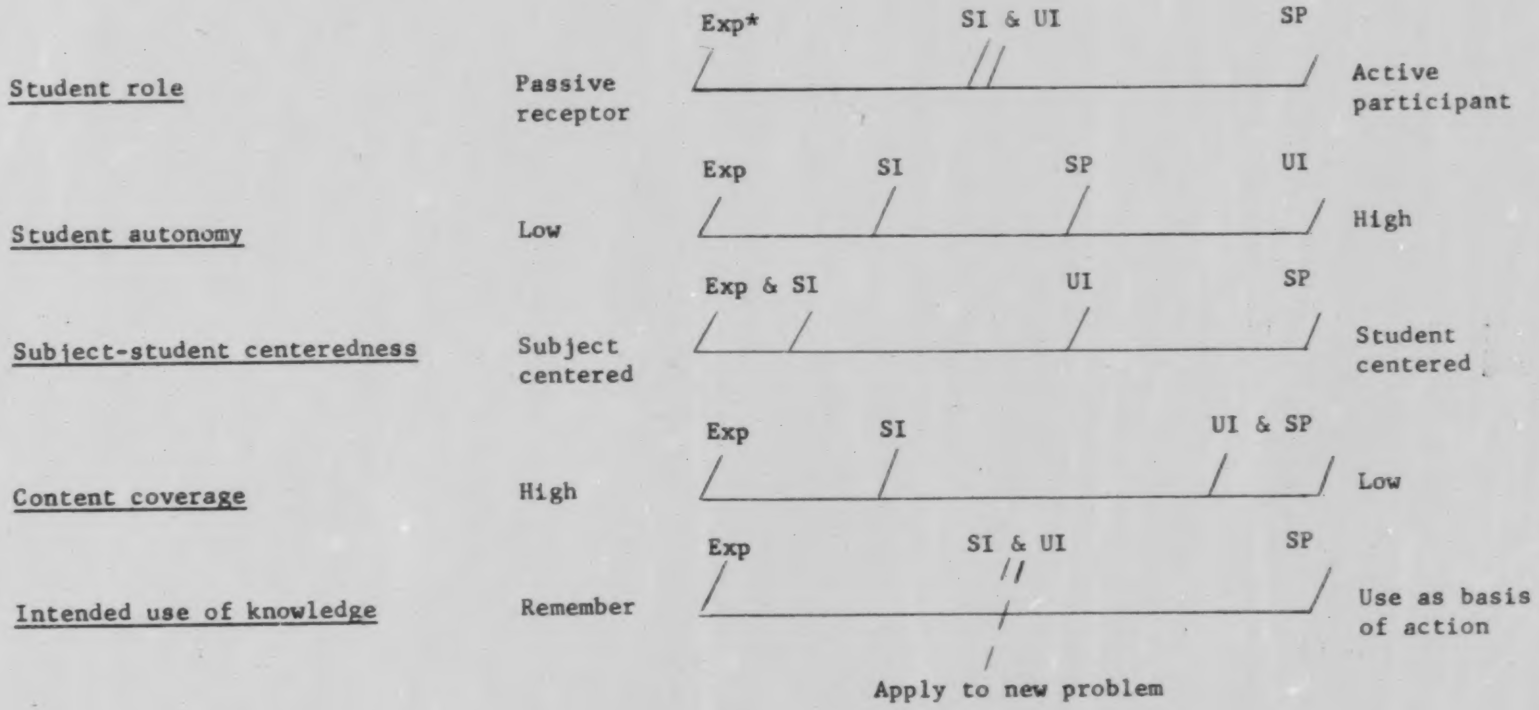
Student role
Passive receptor
Exp*
SI & UI
SP
Active participant
Student autonomy
Low
Exp
SI
SP
UI
High
Subject-student centeredness
Subject centered
Exp & SI
UI
SP
Student centered
Content coverage
High
Exp
SI
UI & SP
Low
Intended use of knowledge
Remember
Exp
SI & UI
SP
Use as basis of action
Apply to new problem

Figure 2. Position of Approaches on Comparative Continua.
*Key: Exp -- Expository, SI - - Structured Inquiry, UI - - Unstructured Inquiry, SP - - Social Participation

as in Figure 1, with 1 for goals and objectives, 2 for planning, 3 for instruction, and 4 for evaluation. The third digit refers to the skill within the main function, and these are ordered sequentially. Thus 3.2.2 refers to the second unstructured inquiry planning skill, and 0.4.1 refers to the first common evaluation skill.

FUNCTION: SETTING GOALS AND OBJECTIVES

SKILL: SELECTS GOALS AND OBJECTIVES

0.1.1 indicators

college classroom
or learning lab

Given goals and objectives prepared in a variety of forms, such as existing curriculum materials, resource units, and objectives catalogs, select goals and objectives. Selection should:

--take into consideration student characteristics derived through preinstructional assessment

--articulate parts of the curriculum or course

--insure congruence with other elements such as teaching approach,subject matter and evaluation approach

--insure consistency of goals with objectives

The general skill can be tested in a simulated setting, in which the teacher is provided with a range of goals and objectives from which to choose, as well as other relevant information such as student characteristics, general curriculum framework and subject matter. It might well be tested as part of a unit-planning assignment

microteaching or
actual classroom

The same criteria and procedure can be employed in these contexts, although the situational information is real instead of contrived. This means that the persons rating the goal/objectives selection behavior will need the same data, such as student characteristics data and subject matter considerations, as the teacher being assessed

SKILL: CONSTRUCTS GOALS AND OBJECTIVES

0.1.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given information about student needs and characteristics, curriculum or course, instruction and evaluation approach, construct goals and objectives for teaching a lesson, unit, or course. Criteria and procedures for assessing this skill are the same as those presented in 0.1.1 above.	The same criteria and procedures as suggested in 0.1.1 and in the other part of this section can be used in a live classroom setting.

SKILL: SEQUENCES OBJECTIVES

0.1.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of objectives for a social studies teaching unit, sequence the objectives into a meaningful sequence. Criteria for assessment include: --recognition of which knowledge/thinking/performance objectives are prerequisite to others --recognition of theories of knowledge --recognition of learning theory This skill can be assessed by a paper and pencil class assignment, or through the criterion test of a programmed instructional package. It could also be embedded in a unit planning assignment. Rating of the performance by a skilled judge is required.	The skill and indicators are the same for this context. Assessment will be in terms of the teacher's sequencing of his or her own objectives for a specific instructional situation given student information and course sequence

SKILL: JUSTIFIES GOALS AND OBJECTIVES

0.1.4 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of goals and objectives, and their sequencing for a social studies unit or course, justify them according to following: --systematic linking with a broad philosophy of social studies teaching --systematic linking to other teaching elements such as materials, instructional procedures, and evaluation approaches This skill must be rated by a skilled judge, and can be assessed as part of a classroom exercise or unit planning assignment.	The same criteria and procedure can be employed in this setting. Justification can also be judged against the criteria of congruence with perceived needs and abilities of students, and congruences with other relevant goals and objectives, as in other courses and subject areas in a total school curriculum.

FUNCTION: PLANNING

SKILL: LOCATES, SELECTS AND ADAPTS MATERIALS

0.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given goals and objectives for social studies unit or course, and information about students, locate, select and adapt materials and resources to support instruction. Specific behaviors for locating materials include: --reading professional journals such as Social Education, publishers announcements --communicating with other teachers about materials	The same criteria and procedures can be used to assess the skill in these contexts. The necessities of planning for actual instruction, rather than an assignment, provide the stimulus for performance of the skill. In either case, a judge is required to rate performance.

--using existing collections of curriculum materials, resource units, and guides

--searching libraries, periodicals

Specific selection behaviors consist of:

--judging the relevance, readibility and interest level of materials

--including or excluding materials on the basis of those judgments

Specific adaptation behaviors include changing selected materials in such ways as to make them more appropriate for use in a given class context by:

--rewriting to improve readability and interest

--simplifying tabular material

--abstracting historical documents

Skillfulness in performing this task might best be assessed through the use of paper and pencil tests, if objectivity is important. An assignment for location of materials relevant to a given topic, subject, unit or problem is one means of such a procedure. Giving a range of possible materials to a teacher, together with specific goals and objectives and learner characteristics, is another. Similar assessment procedures could be generated for skillfulness in adaptation. These elements can also be embedded in a unit construction assignment.

SKILL: INVENTS MATERIALS

0.2.2

indicators

college classroom
or learning lab

Given a social studies unit or course, invent materials for use in teaching. Specific examples of skill performance include:

--creating raw data by the invention and use of questionnaires

--making simulations

--writing study guides

--producing slide-tape presentations

--inventing role-playing exercises

--writing lecture outlines

Skillfulness in carrying out this task can be judged against the criteria of creativity, clarity and relevance for objectives and instructional procedures. The only practical means of making this assessment is by individual rating of the materials themselves. Written assignments, including unit planning, can be used for eliciting specific materials-invention behavior and products from teachers.

microteaching or
actual classroom

Performance and assessment of this skill is not different from the colleges classroom setting except in the occasion which elicits the behavior.

SKILL: SEQUENCES MATERIALS

0.2.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of social studies materials and student, unit/ course and other information, sequence the materials: --consistently with instructional approach --logically, so that they form a reasonable progression --psychologically, so that the sequence fits with learning theory principles and developmental considerations The assessment of this skill is made by rating the sequence against the above criteria.	The same criteria and procedures can be used here as in the classroom context.

SKILL: SELECTS AND SEQUENCES INSTRUCTIONAL PROCEDURES

0.2.4 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social studies unit, selects and sequences instructional procedures. The teacher plans the instructional 'parts' which he or she will play in sufficient detail that another teacher could follow the plan without other instruction. Thus, completeness and specificity, as well as clarity of expression, are criteria for skillfulness. Also, the teacher must sequence the parts into a meaningful whole which is consistent with the objectives, materials and evaluation plan associated with this particular unit.	The same criteria and procedures would be applied in assessing this skill in an actual teaching setting.

Assessment of this subtask can be made in written or oral lesson- or unit-planning exercises. At the lowest level of skillfulness, teachers could be judged on their ability to select and sequence instructional procedures from a variety of suggestions, given objectives, materials and information about learners. At a higher level, the teacher finds or invents his or her own procedures, rather than choosing them from among givens.

FUNCTION: INSTRUCTION

No common skill statements will be made for this task category, because the content of such statements cannot be made sufficiently general to bridge the four social studies teaching approaches. A separate Instruction section thus appears for each approach.

SKILL AREA: EVALUATION

SKILL: PRE-ASSESSES STUDENTS

0.4.1

indicators

college classroom or learning lab

The teacher assesses learners attitudes, knowledge and skills prior to instruction as the basis for selecting and inventing goals and objectives, planning materials and instruction. Related behaviors include:

--locating and utilizing existing student records to obtain skill test scores and previous achievement records

--selecting, administering and interpreting the results of standardized tests such as reading ability and comprehension, critical thinking, subject matter and creativity

microteaching or actual classroom

The same criteria can be used to judge skillfulness on this task. The actual teaching context, however, provides a setting for tapping skill levels which are higher than in the simulated situation encountered--the college classroom or learning lab. The next highest skill level involves using already existing instruments and techniques with individual students or small groups. Here the ability to obtain raw data from real students, rather than relying on already existing data, is added. The highest level involves working with entire classes and inventing instruments as well as utilizing already prepared ones. This requires a naturalistic teaching setting.

--devising, administering and interpreting interest and attitude instruments

--interviewing or observing individuals and groups to determine attitude, skill and knowledge levels

Skillfulness on this task can be judged on the criteria of accuracy and validity of the instruments used and the data generated, and of interpretive accuracy achieved by the teacher.

Simulated exercises can be developed which test the ability to interpret and generalize from already existing student information. For example, student profiles of various reading test scores are provided the teacher, who is asked to interpret the scores as they relate to objectives level, materials selection, and pace of instruction.

SKILL: CARRIES OUT FORMATIVE AND SUMMATIVE EVALUATION

0.4.2 indicators

college classroom or learning lab	microteaching or actual classroom
The teacher carries out formative and summative evaluation of intended student outcomes. Behaviors associated with this subtask are extensive: --the teacher must be able to construct valid test items including both objective and essay types --for formative evaluation, alternative forms of the same test must be constructed	All of these behaviors can be assessed in a naturalistic teaching setting through ratings of tests actually used against the criteria set forth above such as congruence with objectives, etc.

--criteria and procedures for evaluating essay answers must be invented

--the test items must be made consistent with the objectives for a given unit of teaching

--they must be made to assess the thinking level implied by those objectives, e.g., if a primary objective of a unit is to enable students to apply economic principles to specific current problems, the tests must contain items tapping that application ability

--the teacher must also be able to place a valid interpretation on a set of formative or summative test results

--the teacher should also be able to invent and use instruments and/or techniques for evaluating outcomes such as attitudes not amenable to typical testing (e.g., attitude instruments, single or group interviews and oral or written reports

--for formative evaluation, providing informative feedback to the students is a crucial behavior

--for summative evaluation, communicating the evaluation judgments to individuals by grades or other forms is an important teacher behavior

These skills are amenable to assessment through simulated, as well as live, teaching settings. A lower level of skill can be assessed in non-teaching settings with paper and pencil exercises.

For example, if teachers are given a set of goals and objectives and some student information, they can be instructed to invent formative and summative tests which are congruent with the objectives and information. The teachers, if they possess the appropriate skill, should be able to generate alternative but equivalent items and test forms for formative testing. They should be able to match the level of objective with test items at a parallel level.

SKILL: DIAGNOSES STUDENT LEARNING DIFFICULTIES

0.4.3 indicators

college classroom or learning lab

The teacher identifies and prescribes remedies for specific student learning and/or attitudinal problems. This diagnostic task involves many behaviors that are intuition based, and are difficult to explicate. One important diagnostic behavior has to do with student reading ability and motivation:

--a teacher must be able to determine whether student learning or attitudinal difficulty is based on a reading problem

--if it is, then the teacher must be able to differentiate between motivational, perceptual/psychomotor, and cognitive reading problem

--these diagnostic problem differentiation behaviors might involve using formal and informal tests, unobtrusive observation, and interview or counseling procedures

microteaching or actual classroom

For intermediate skill levels, work with individual problem students in a laboratory or classroom setting can be assessed for effectiveness, with one criterion being the accuracy of diagnosis, and another the effectiveness of prescriptions made for the students after diagnosis as reflected by student learning. The highest skill level would be assessed with the teacher performing diagnostic tasks in the context of a full classroom with multiple demands, rather than just diagnosis, being placed on him or her. Criteria for this highest level are the same as for the intermediate level.

Diagnosis of reading difficulties is of paramount importance in this and all other subject matter areas, and at all grade levels. Another diagnostic behavior is:

--determining whether the student is able to comprehend, at the lowest cognitive levels, information that is presented and is prerequisite to other, higher level, thinking abilities.

--prescribing remedies for the difficulties uncovered in the diagnosis

Skill in performing this task can be assessed, at lower levels, through the use of simulations, or case studies.

SKILL: EVALUATES STUDENTS' UNINTENDED OUTCOMES

0.4.4 indicators

The teacher assessed student outcomes which were not anticipated prior to instruction. These might be positive or negative, and include cognitive learning and attitude change. Specific behaviors include those suggested in 0.4.2 above. In addition, the teacher must be able to hypothesize, through intuitive hunches and suspicions, what the possible good and bad latent outcomes are or will be. Sensitivity to subtle student cues is one characteristic probably necessary for skillful performance of this task.

Assessment of skillfulness on this task follows the same lines as suggested in 0.4.2.

SKILL: EVALUATES OWN INSTRUCTION

0.4.5 indicators

college classroom or learning lab	microteaching or actual classroom
Assesses self-performance of all aspects of the teaching act, focusing on the four functions outlined in this chapter[1].	Intermediate level records of performance in a laboratory setting, such as a microteaching laboratory, can be self-assessed by the teachers after

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[1] Elaboration of this important subtask is found in Lee H. Ehman, Howard Mehlinger, and John Patrick, Toward Effective Instruction in Secondary Social Studies, Boston: Houghton-Mifflin, 1973, forthcoming. See Chapter 11.

Specific behaviors include:

- --making and using records of teaching performances
- --generating and interpreting peer and student reactions to teaching performance through paper and pencil instruments, and individual or group interviews
- --using verbal/nonverbal interaction analysis systems to describe and assess instructional performance
- --the ability to articulate the standards or judgment criteria used in instructional evaluation

Three skill levels of task performance are possible. At the lowest level, records of others' teaching performances can be subjected to analysis by teachers performing this task. Case studies with a range of data, including objectives, materials and instructional procedures, tests might be analyzed and evaluated by the teachers according to given or invented criteria.

teaching. The difficulty is increased because the teacher assesses him- or herself, rather than someone else. The highest skill level would simply be assessed in a naturalistic setting, where the teacher evaluates performance in a live classroom, rather than a contrived training situation. Criteria for all levels include ability to select or invent appropriate instruments, ability to record and reduce raw data, accuracy and comprehensiveness of interpretation, and ability to modify behavior based on the self-assessment.

Expository Approach

FUNCTION: INSTRUCTION

SKILL: INTRODUCES TOPIC IN AN INTERESTING MANNER SO THAT STUDENTS ARE MOTIVATED TO PERSEVERE IN LEARNING

1.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
	Introduce a topic to motivate students with the use of more than one method and medium. Student motivation will be indicated by: --direct observation of in-class interest cues

--paper and pencil reactions

--interviews

SKILL: MAKES VERBAL (ORAL OR VISUAL) STRUCTURING STATEMENTS OR MOVES THAT PROMOTE LEARNER'S UNDERSTANDING OF ORGANIZING FRAMEWORK UNDERLYING MATERIAL

1.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a topic, structure the presentation so that it is clear and student comprehension is promoted in a role-playing situation:	Given a topic, structure the presentation so that it is clear and student comprehension is promoted.
--presentation clarity will be rated by observers (and can be tape-recorded)	--presentation clarity will be rated by observers
--student comprehension will be measured by paper and pencil tests	--student comprehension will be measured by paper and pencil tests

SKILL: COMMUNICATES SPECIFIC INSTRUCTIONAL OBJECTIVES TO STUDENTS

1.3.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of instructional objectives, explain them clearly to students by written and/or oral means.	Given a set of instructional objectives explains them clearly to students by written and/or oral means.
--the clarity/precision will be rated by observers	--the clarity/precision will be rated by observers
	--student comprehension will be determined by interviews or paper and pencil tests

SKILL: PRESENTS SUBJECT MATTER IN ORAL OR VISUAL FORM RELATED TO TOPIC OR UNIT BEING STUDIED

1.3.4 indicators

college classroom or learning lab	microteaching or actual classroom
Given a topic, (1) organize the presentation in order to relate each bit back to the structuring moves, (2) visually represent the material, (3) organize for optimum redundancy, (4) organize adequate summaries and transitions, and (5) plan opportunities for student feedback. Criteria for judging the presentation will be clarity, organization/structure, enthusiasm, interest arousal and student comprehension/retention. --clarity can be rated by observers or student feedback can be coded for confusion indicators --organization can be rated by observers --enthusiasm can be rated by such characteristics as gestures, voice inflection, movement --student interest and comprehension can be determined by direct observation or paper and pencil tests	Same as college classroom or learning lab

SKILL: PRESENTS SUBJECT MATTER BEGINNING WITH GENERALIZATIONS; SUPPORTING THESE WITH MORE DISCRETE BITS OF DATA SYSTEMATICALLY LINKED TO GENERALIZATIONS

1.3.5 indicators

college classroom or learning lab	microteaching or actual classroom
Given a subject matter topic, present it beginning with generalizations and supporting them with	Same as college classroom or learning lab

discrete bits of data. Criteria for judging the presentations will be clarity, organization/structure, enthusiasm, interest arousal, and student comprehension/retention. These criteria can be rated as described in Skill 1.3.5

SKILL: PRESENTS SUBJECT MATTER BEGINNING WITH DISCRETE BITS OF DATA AND CONSTRUCTING WARRANTED GENERALIZATIONS

1.3.6 indicators

college classroom or learning lab	microteaching or actual classroom
Given a subject matter topic, present it beginning with discrete bits of data and constructing warranted generalizations. Criteria for judging the presentation will be clarity, organization/structure, enthusiasm, interest arousal and student comprehension/retention. These criteria can be rated as described in Skill 1.3.5	Same as college classroom or learning lab

SKILL: PROVIDES FOR STUDENT RECALL AND INTEGRATION OF PRIOR KNOWLEDGE WITH CURRENT SUBJECT MATTER PRESENTATION

1.3.7 indicators

college classroom or learning lab	microteaching or actual classroom
Given a printed or taped class dialogue, state appropriate memory eliciting questions, identify appropriate occasions for positive and negative verbal and non-verbal reinforcement, and state utilizations of relevant student responses and initiations. Skillfulness will be rated on the appropriateness of the performance.	Given a group of students and a topic, engage in the previously stated activities. Skillfulness will be rated on appropriateness and timing as assessed by a coding system (e.g., Flanders' IA, OScAR).

SKILL: PROVIDES APPROPRIATE PRACTICE TO STRENGTHEN LEARNING OF SUBJECT MATTER PREVIOUSLY PRESENTED

1.3.8 indicators

college classroom or learning lab	microteaching or actual classroom
Given a subject matter presentation:	Given a subject matter presentation:
--plans appropriate application questions	--asks appropriate application questions
--performs a demonstration and plans an application exercise using new data to operate upon with the previously learned principles and generalizations	--performs a demonstration and has students apply the principles and generalizations using new data
--plans questions to elicit interpretations of new data by students using a learned procedure	--asks questions to elicit interpretations of new data by students using a learned procedure

SKILL: PROVIDES FOR TRANSFER OF KNOWLEDGE LEARNED PREVIOUSLY TO NEW PROBLEMS AND SITUATIONS

1.3.9 indicators

college classroom or learning lab	microteaching or actual classroom
Given previously learned knowledge, plans exercises in which it is applied in its original or a modified form to unfamiliar situations. Skillfulness can be assessed by rating:	Given previously learned knowledge and plans for exercises in which it is applied in its original or a modified form to unfamiliar situations:
--plans for appropriate application questions	--asks appropriate application questions
--performance of demonstration and plans for an application exercise using new data to operate upon with the previously learned principles and generalizations	--performs a demonstration and has students apply the principles and generalizations using new data
	--asks questions to elicit interpretations of new data by students using a learned procedure

--plans for questions to elicit interpretations of new data by students using a previously learned procedure

SKILL: PROVIDES FOR REMEDIATION FOR THOSE STUDENTS EXPERIENCING DIFFICULTIES LEARNING THE INTENDED SUBJECT MATTER

1.3.10 indicators

college classroom or learning lab	microteaching or actual classroom
Given written or taped case study materials, diagnose learning difficulties and prescribe and explain alternative forms of instruction for individual students.	Given students and an already presented subject matter unit, diagnose learning difficulties and prescribe and explain alternative forms of instruction for individual students.
--skillfulness will be rated on the basis of the congruence between diagnosed difficulties and prescribed remedies	--skillfulness will be rated on the basis of the congruence between diagnosed difficulties and prescribed remedies --skillfulness will be rated on the basis of student achievement after alternative instruction has been administered

Structured Inquiry Approach

FUNCTION: INSTRUCTION

SKILL: ESTABLISHES OPEN CLASS CLIMATE

2.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a film, audio or videotape recording of classroom behavior, the teacher:	Given any classroom setting, the teacher actively contributes to an open classroom climate by purposefully carrying out behavior such as:
--identifies teacher and student behavior which contributes to open and to closed classroom climate	--acting in a friendly, non-threatening way by smiling, showing interest in student feelings and ideas by listening intently, using non-verbal accepting cues such as nodding approval

- --supplies verbal statements at indicated junctures in the record, which would contribute to an open classroom climate

Explains, orally or in writing, the elements of an open classroom climate.

Responds accurately to a paper and pencil test of knowledge, comprehension and application of understanding about establishing an open classroom climate.

- --refraining from harsh criticism involving sarcasm or other means of hurting and shaming a student

- --soliciting, accepting and using student suggestions for modifying class rules, procedures, topics, activities

- --refrain from talking enough of the time so that the student talk/teacher talk ratio is at least 1.0

Coding procedures, observer ratings and student ratings can be used to assess this skill

SKILL: CONFRONTS STUDENTS WITH OR OTHERWISE INTRODUCES A SOCIAL STUDIES PROBLEM

2.3.2

indicators

college classroom or learning lab

Given a social studies problem:

- --explains orally or in writing the essential features of the problem which are necessary for the beginning inquiry stages

- --arranges, displays or otherwise focuses attention using pictures, recordings, artifacts, speakers so as to highlight a problem

- --arranges, displays, explains discrepant data which illustrate that problem

Given a film, audio or videotape recording of classroom behavior:

- --identify steps in problem introduction carried out by the teacher

- --critique the approach used to introduce the problem

- --rate the teacher's enthusiasm in introducing the problem

microteaching or actual classroom

Displays and explains or otherwise introduces data in the form of written/oral interpretation, documents, pictures, interviews, tables and graphs, recordings, films, speakers so that students are exposed to the elements of a problem.

Displays and explains discrepant data or conflicting interpretation concerning a problem.

Projects enthusiasm by gesture, bodily movement, varying voice intonation and inflection, varying speaking rate, and acting interested and excited by the problem being introduced.

Observer coding, rating and student ratings as well as student attitude toward and ability to explain the problem are means of assessing this skill.

SKILL: COMMUNICATES SPECIFIC INSTRUCTIONAL OBJECTIVES TO STUDENTS

2.3.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a film, audio or video tape of classroom behavior, the teacher can:	Communicates instructional objectives to a group of students in a clear fashion.
--identify instances of objectives communication --rate the clarity of this communication --critique the task performance --suggest alternative steps or approaches for accomplishing the task	Observer and student ratings of clarity, as well as student ability to explain the objectives after they have been communicated by the teacher, are means of performance assessment.

SKILL: STRUCTURES OR PROVIDES AN ORGANIZING FRAMEWORK FOR STUDENT LEARNING AND UNDERSTANDING

2.3.4 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social studies topic:	Present and explain visual diagrams, pictures, charts, models, outlines which display underlying structural features of the topic.
--construct visual diagrams, pictures, charts, models, outlines which display underlying structural features of the topic --explain, orally or in writing, an outline or other abstractions of the topic --summarize and review key elements of a topic so as to highlight its critical feature and relationships	Observer and student ratings of clarity, as well as student ability to verbalize the structural elements and relationships of the topic, are means of performance assessment.

SKILL: QUESTIONS STUDENTS USING PROBING AND OTHER QUESTION TYPES AND LEVELS TO ELICIT AND CLARIFY STUDENT STATEMENTS INTEGRAL TO INQUIRY PROCESS

2.3.5

indicators

college classroom or learning lab	microteaching or actual classroom
Given a social studies problem: invent questions which will accomplish the following inquiry functions: --clarify meaning of student statements --clarify implications of student statements --elicit logical grounds for student statements --elicit factual grounds for student statements --elicit definitions --elicit value judgments --elicit hypotheses --elicit generalizations Given instances of student statements or a typed classroom dialogue: --identify instances of the above-stated teacher questions --invent new teacher questions to be inserted at designated spots in the dialogue Given a film, audio or videotape of classroom behavior: --distinguish between instances of probing and non-probing teacher questions --identify instances of factual-memory, convergent, divergent and evaluative questions	Questions students to accomplish the functions listed at left. Both teacher and student performance can be coded to determine successful performance on this task. Student performance of the various inquiry functions listed to the left, following teacher questioning behavior, is reasonable evidence of successful performance.

SKILL: GUIDES STUDENTS IN DISCRIMINATING BETWEEN DEFINITIONAL, EMPIRICAL AND EVALUATIVE ISSUES AND QUESTIONS

2.3.6

indicators

college classroom or learning lab

Given a social studies inquiry problem, orally or in writing, find important definitional, empirical and evaluative problems embedded in it.

Given a film, audio or videotape recording or typed dialogue, of classroom verbal behavior:

- --classify instances of definitional, empirical and evaluative statements
- --at indicated junctures on the record, invent teacher statements and questions which would guide students in analyzing each of the three types of issues and questions noted above

microteaching or actual classroom

At appropriate junctures in a class discussion, explain or question so as to guide students to discriminate between definitional, empirical and evaluative questions/issues.

Make smooth and clear transitions between definitional, empirical and evaluative questions/issues.

Avoid abrupt and frequent shifts from one to another of these types of issues so as to minimize confusion and to maximize clarity of the discussion.

Observer ratings must be used to assess performance of this task.

SKILL: ACCEPTS AND REACTS TO STUDENT STATEMENTS BY USING PRAISE, CORRECTIVE FEEDBACK, AND INCORPORATING STUDENT IDEAS INTO INSTRUCTION

2.3.7

indicators

college classroom or learning lab

Given a film, audio or videotape, or transcript record of classroom behavior, the teacher can:

- --identify, using a coding system, instance of (1) acceptance of student ideas, (2) use of student ideas, (3) praise, (4) corrective feedback
- --invent statements which would fulfill the four functions listed above

microteaching or actual classroom

Accept and react to student statements so as to:

- --accept student ideas
- --use student ideas
- --praise student ideas
- --provide corrective feedback to student ideas

Assessment of this task performance can be made through the use of a coding system such as Flanders basic category system, categories 2, 3 and 7.

SKILL: DEMONSTRATES AND ENCOURAGES THE USE OF DIMENSIONS OR CONTINUA IN TREATING VALUATIONAL ISSUES

2.3.8 indicators

college classroom
or learning lab

Given a valuational issue:

--construct and define several dimensions or continua useful in the analysis of the issue

Given a film, audio or videotape record of classroom behavior:

--identify potential dimensions which would be useful in value analysis

microteaching or
actual classroom

Introduce and explain the use of dimension in value analysis to students engaged in value inquiry:

--use the board or overhead projector to illustrate visually the dimensions and their end points

--ask for rank orderings, on the dimensions, of value objects

Assessment of this skill must be made by an observer rating the performance.

SKILL: CHALLENGES STUDENT VALUE POSITIONS BY THE USE OF ANALOGIES

2.3.9 indicators

college classroom
or learning lab

Given a student value position, the teacher can:

--identify the principle(s) underlying the position

--challenge that principle by substituting a new case or set of facts to which the principle might apply, and constructing questions about this new case which would cause the student to modify the principle, or to continue to endorse it

Given a film, audio or videotape, or transcript record of classroom dialogue, the teacher can:

microteaching or
actual classroom

Challenge a student's value position by clarifying a principle underlying the student argument, and then presenting an analogy to which the same principle must be applied.

This skill must be assessed by an observer rating the behavior.

--identify instances of
analogies used by students
or the teacher

--instances where analogies
could be used to challenge
student positions

Unstructured Inquiry Approach

3.1 Setting Goals and Objectives

Skills for this function are, in general, as described in the common skills section. However, less emphasis is placed on setting and sequencing specific objectives in unstructured inquiry teaching because of its open-ended nature and because the content of the inquiry is not necessarily prescribed nor anticipated by the teacher. Setting goals amounts to subscribing to the educational ends implied by the procedures set forth in the instruction section below--the active involvement of learners who sense and clarify a problem, hypothesize solutions, analyze value questions, collect data, test hypotheses, draw and verbalize conclusions, and attach personal meaning to them. Justifying goals and objectives is as described in the common skills section.

3.2 Planning

The planning skills in unstructured inquiry are similar to those specified in the common skills section, but require much more flexibility and adaptability to student desires and rapid changes in the direction of inquiry. Much more likely than with either the expository or structured inquiry approaches, planning for multiple sub-groups, rather than a single class, is necessary.

In unstructured inquiry teaching, materials preparation involves adaptation and invention, rather than adoption. In addition, utilization of local resources outside the school is a materials-related subtask teaching skill for unstructured inquiry.

FUNCTION: PLANNING

SKILL: PREPARES MATERIALS

3.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Anticipates the need for, locates and adopts, or invents, materials to introduce, highlight or provide data bearing on a social studies inquiry problem. Low-level skill indicators of this task include: --collecting and organizing data relevant to a range of social studies problems --locating relevant data, given a real or hypothetical problem situation	--providing sets of data simultaneously to several student subgroups working on different problems, or different approaches to the same problem

SKILL: UTILIZES LOCAL RESOURCES

3.2.2 indicators

college classroom or learning lab	microteaching or actual classroom
Knows, locates, communicates with local individuals/agencies with which students might work in seeking out data relevant to social studies problems. Arranges when necessary, meetings, tours, demonstrations, etc., for student groups --is aware of and can locate local resources --names or lists from prior knowledge or as result of research, individuals/agencies which might provide useful information germane to a specified social studies problem in one such indicator	--communicates with and arranges for appropriate meetings, etc., with individuals/agencies

3.3 Instruction

Instructional tasks for unstructured inquiry are similar to those for structured inquiry. They require, however, more flexibility and responsiveness to students than any of the teaching approaches. This flexibility and responsiveness is a quality which cuts across all of the unstructured inquiry tasks; without it, high-level skillfulness in any task is absent. Unlike other approaches, where the faithful execution of a well-grounded plan marks skillful instruction, unstructured inquiry makes necessary a high level of creative improvisation on the part of the teacher. Of course, this improvisation has to be supported by intensive preparation--perhaps more so than for the other approaches--and a clear notion of inquiry-related goals. But the latter are only necessary, and not sufficient, characteristics of skillful unstructured inquiry instruction. Flexibility and responsiveness to unanticipated directions are also crucial.

SKILL: MOTIVATES STUDENTS

3.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
Written or oral plans for motivation can be rated for their potential for contributing to the factors listed to the right.	Helps to release student interest, enthusiasm, and perseverance for inquiry into social studies problem. Specific teacher behaviors include: --challenging students intellectually --presenting data which conflict with student ideas and beliefs --using media in a compelling way --exhibiting teacher's own enthusiasm about a particular area or problem --amplifying, through reinforcement, interest in problems brought up by students

One low-level skill indicator is teacher enthusiasm. Ratings of enthusiasm have been linked to positive student outcomes, and this connection might operate through the linkage of increased student motivation. A higher-level indirect indicator must be the level of motivation indicated by students themselves. Interest response instruments, observations of external student physical cues indicating interest and enthusiasm can be used. Measuring student perseverance--the amount of time and effort he or she is willing to spend on the inquiry-- is another indirect indicator.

SKILL: INTRODUCES/ELICITS AND CLARIFIES PROBLEM

3.3.2 indicators

college classroom or learning lab

One low-level skill indicator is the ability to explain orally or in writing the essential features of a problem which are necessary for the beginning inquiry stages. Another is the ability to arrange, display and explain interpretation of discrepant data which illustrate a problem or sub-problem. Also, arranging, displaying or otherwise focusing attention using pictures, recordings, artifacts, speakers, etc., so as to highlight a problem is an indicator.

A higher-level skill indicator is the degree to which students, after having been introduced to the teacher's or other student's problem, can articulate its general critical features. Negative indicators might include student behavior such as confused questions responses and reactions, random or avoidance actions, questions or requests for extensive reexplanation, etc.

microteaching or actual classroom

Confronts students with or otherwise unfolds a social studies problem or problem area, or stimulates students to introduce their own problems. Specific behaviors might include:

--introduction of conflicting or discrepant data or interpretations relating to a problem area

--use of pictures, artifacts, recordings, interviews, speakers or other means of revealing the problem dimensions

--a verbal description by the teacher of the problem; or any combination of these.

reinforcement, corrective feedback, probing, etc., can be observed and/or rated through this observation.

SKILL: ELICITS HYPOTHESES

3.3.5 indicators

college classroom or learning lab	microteaching or actual classroom
High-level skill is indicated by the ability, in a teaching situation, to elicit a range of plausible hypotheses from students. Frequency counts and quality ratings can be employed in assessment.	Elicits, by way of questions, student hypotheses to answer or solve the problem which has been formulated and clarified. A range of alternative hypotheses, rather than just one, is a condition of success on this task. Teacher behavior in this task centers around: --divergent questions --probing techniques and any other eliciting operations Low-level skill indicators are divergent questions formulation and asking and probing. Paper and pencil tests or direct observation of teaching can be used to assess low-level skill.

SKILL: FACILITATES STUDENT PLANNING

3.3.6 indicators

college classroom or learning lab	microteaching or actual classroom
Low-level skill indicators include performance of the inquiry planning activities by the teacher himself, including anticipating data needs, working out sources, methods, etc., for their collection. Ratings by another person would be required for assessment of skillfulness on this task.	Facilitates student planning necessary to carry out hypothesis testing activities including data collection. This task includes: --helping students determine what data are needed, when, how and where they might be collected, etc. Specific teacher behavior includes: --rapid and frequent shifting from group to group and problem to problem --probes so as to give maximum help to those groups requiring it

SKILL: ELICITS AND USES STUDENT REACTIONS TO THE PROBLEM

3.3.3 indicators

college classroom or learning lab	microteaching or actual classroom
	Elicits a range of student reactions to the problem, and helps students explore the differences in reactions to the problem. Primary teacher behavior for this skill include: --divergent eliciting questions --acceptance/use of student ideas Skill indicators can be generated from direct observation of teaching using an instrument such as subscripted Flanders' Interaction Analysis System, the Reciprocal Category System, etc., with special emphasis on the Flanders' basic categories 2 and 3.

SKILL: FORMULATES AND CLARIFIES EXPLICIT PROBLEM STATEMENT

3.3.4 indicators

college classroom or learning lab	microteaching or actual classroom
	Guides and encourages students to apply analytic thinking skills in explicating and clarifying the problem as fully as possible. --elicits key definitions --questions, summarizes, reinforces, corrective negative feedback, etc., should be aimed at facilitating student articulation of the problem --teacher probing questions should be especially evident in the problem clarification stage Skill indicators can be generated from direct observation of teaching. Frequency and quality of teacher questions,

--gives suggestions

--asks challenging questions

High-level skill indicators must be generated from observation of the teacher while in the process of carrying out the task. Ratings of both teacher and student progress in the planning would be used, and would focus on the quality and completeness of the planning activity. Seeming disorder or disjointed activity might obscure accurate ratings and should be carefully screened out of the ratings if not detracting from the basic task.

SKILL: FACILITATES STUDENT DATA GATHERING

3.3.7 indicators

college classroom
or learning lab

A low-level indicator of skillfulness would be the ability, given a paper and pencil problem set, to explain ways in which a teacher could help class subgroups to collect data bearing on one or more social inquiry problems.

microteaching or
actual classroom

Assists students in obtaining data with which to test the hypotheses that have been generated. Behaviors include:

--suggesting or locating library references

--making available existing files or books made ready for the purpose

--suggesting and/or arranging interviews or visits, etc.

Skillfulness in this task is, of course, linked closely to knowledge of and ability to work with data in social inquiry applications. In performing this task, the teacher must help students engage in firsthand activity that generates new data bearing on the problem.

Higher-level skill would be indicated through observation and rating of data gathering facilitation activities in a naturalistic or laboratory setting. Rating criteria should include movement from problem to problem, rather than ignoring one or more groups or problems, suggesting alternative rather than singular sources, plans, etc., accuracy of suggestions in a particular content field, etc.

SKILL: ELICITS STUDENT HYPOTHESIS TESTING/GENERALIZATION

3.3.8 indicators

college classroom or learning lab	microteaching or actual classroom
Low-level indicators of this skill can be generated in laboratory teaching settings, in which the teacher helps a small group or even single students to synthesize and generalize from data and a problem presented to them.	Ensures that students convert and synthesize data collection activities into hypothesis testing, hypothesis modificatio and grounded generalizations. Specific teaching behavior relevant to this task includes: --asking convergent, divergent and evaluative questions --probing --comparing and contrasting student ideas --asking questions which challenge --reinforcement and criticism of student ideas, especially as included in oral and/or written student reports Higher-level skill would have to be demonstrated in naturalistic teaching settings in which the teacher is dealing with a multiple set of problems and students. Criteria on this task used by raters should center around the hypothesis testing/generalization/synthesis operations performed by students as a result of the teacher's indirect structuring or his or her direct intervention in the process

SKILL: FACILITATES GROUP PROCESS

3.3.9 indicators

college classroom or learning lab	microteaching or actual classroom
	Facilitates productive social interaction in class so as to maximize the educative function of group inquiry experience. More specific teacher behavior for this task are:

--awareness of and use of peer leadership

--intelligent grouping of individuals for small-group work

--reduction or stimulation of interpersonal tension in student groups

Teacher might also include:

--modeling both group leader and group follower roles

--facilitating fidelity of within-group communication

Although this task is a very important component of the unstructured inquiry approach, its specific skill indicators are somewhat imprecise. This is partly because of the particularistic and personalistic nature of the task and the setting in which it might be performed. Nevertheless, here are some possible group process skill indicators:

--deliberate grouping or regrouping so as to balance talent, defuse potentially troublesome conflict

--designate leadership in large- or small-group work or deliberately not so designate, so that leadership skills are fostered and practiced

--probe, reflect, repeat, refocus or otherwise clarify communications within a group so that the fidelity of such communications is maximized

--reduce within-group conflict by depersonalizing discussions, moving from points of conflict to other, more fruitful issues, etc., and modeling discrete roles and functions by taking part as a student in large- and small-group work.

3.4 Evaluation Tasks

The evaluation tasks and skill indicators for the unstructured inquiry approach are as presented in the common skills section. The formative and summative evaluation tasks will be somewhat less structured than in the expository and structured inquiry approaches, although these tasks are just as necessary in the present approach. Rather than structured tests, the instrumentation of such evaluation necessarily must involve oral and/or written reports on the progress and conclusion of the inquiry process, as well as informal observation by the teacher of students as they proceed through the various inquiry elements. Grading students' work may have to be made on a group rather than an individual basis. Student self-evaluation is another possible tool to use in this approach.

Social Participation Approach

FUNCTION: GOALS AND OBJECTIVES

SKILL: CONSTRUCTS SOCIAL PARTICIPATION PERFORMANCE OBJECTIVES APPROPRIATE FOR GIVEN SOCIAL PARTICIPATION CONTEXT

4.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social participation context and a set of social participation skill categories, the teacher will construct a set of performance objectives as: --techniques of clear interpersonal communication	Use same procedure.

--techniques of participant observation

--designing and organizing group activities

--scheduling group activities

--mobilizing support within groups and between groups and individuals

--bargaining and negotiating

--determining individual and group costs and benefits of group activities

--using alternative, appropriate decision-making processes

--generating and disseminating information in groups with given communication structures

--defining and using various leader-follower relations

--identifying problems and designing group experiences to facilitate constructive problem solution, (Gillespie and Patrick, (1973).

In order to satisfy these criteria:

--potentially achievable within the given social participation context

--appropriate for the range of student ability

FUNCTION: PLANNING

SKILL: WRITES PROPOSALS FOR STUDENT PARTICIPATION EXPERIENCE IN GIVEN SOCIAL PARTICIPATION CONTEXT

4.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social participation context, the teacher will write a proposal	Use the same procedure.

for a student participation experience in that context to clear and complete in the following areas:

--the instructional objectives for the participation experience

--rationale for participation experience in terms of curriculum

--identification of time and financial requirements for all concerned

--description of social participation context

--description of expected student participation activity

--identification of costs and benefits for people already in social participation context

--implementation schedule for social participation proposal

SKILL: ESTABLISHES COOPERATIVE RELATIONSHIPS WITH PEOPLE IN DESIRABLE SOCIAL PARTICIPATION CONTEXTS AND WITH SCHOOL ADMINISTRATORS

4.2.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a role-playing situation in which people play roles of school administrators and people in social participation contexts, the teacher will establish cooperative relationships with the people in those roles, with performance evaluated for adequacy in the following areas: --identification of costs and benefits to people in the social participation context	The procedure will be the same except real social actors will be meeting with the teachers.

--explanation of proposal

--responses to questions

--degree to which the teacher's approach was positive and non-threatening

SKILL: IDENTIFIES STUDENTS WITH APPROPRIATE CHARACTERISTICS TO PARTICIPATE IN GIVEN SOCIAL CONTEXT

indicators

4.2.3

college classroom or learning lab	microteaching or actual classroom
Given written records and descriptions of students and a description of a particular social participation experience, the teacher will identify the prerequisite knowledge, skill, personal and social characteristics needed to participate and will match with appropriate experience.	The procedure will be the same except the student descriptions will be replaced with student interviews.

FUNCTION: INSTRUCTION

SKILL: INTRODUCES PARTICIPATING STUDENTS AND PEOPLE WITH WHOM THEY WILL WORK IN A SOCIAL PARTICIPATION CONTEXT

indicators

4.3.1

college classroom or learning lab	microteaching or actual classroom
Given a role-playing situation, the teacher will structure an introduction in which peers playing students and the people with whom they will work are introduced and the social participation experience is begun, clarity of introduction to all concerned will be rated in the following areas: --responsibilities and expectations of each participant --limits of experience and time requirements and scheduling of activity	The same procedure will be used except real social actors will be introduced by the teachers.

--how to start the participation experience

SKILL: UTILIZES DEMONSTRATION TO TRAIN STUDENTS TO PERFORM SOCIAL PARTICIPATION SKILLS

4.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social participation context, the teacher will describe, justify, and demonstrate social participation skills appropriate for the given situation. Adequacy of the demonstration will be evaluated by observer's ability to identify, describe, and justify the social participation skills demonstrated.	The procedure will be the same except school students replace the observers.

SKILL: UTILIZES SIMULATION(e.g., ROLE-PLAYING, GAMING) TO TRAIN STUDENTS TO PERFORM SOCIAL PARTICIPATION SKILLS

4.3.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a simulation of a social participation situation, the teacher will engage peers role-playing students in the activity so that they will practice pre-determined social participation skills.	The procedure will be the same except real students will participate.

SKILL: CONDUCTS ANALYTICAL AND EVALUATIVE DISCUSSIONS WITH STUDENTS DURING AND AFTER STUDENT SOCIAL PARTICIPATION EXPERIENCES WHICH THE TEACHER CANNOT DIRECTLY OBSERVE

4.3.4 indicators

college classroom or learning lab	microteaching or actual classroom
Given a role-playing situation, the teacher will interview a peer role-playing a student to obtain enough information to	The same procedure will be used except real students will be interviewed after a real social participation experience not directly observed by the teacher.

analyze and evaluate the student's social participation performance. The teacher will initiate the interview with a series of analytical questions designed to elicit essential data.

SKILL: PROVIDES STUDENTS WITH ANALYTICAL AND EVALUATIVE DATA REGARDING THEIR PERFORMANCE OF SOCIAL PARTICIPATION SKILLS IN A TEACHER OBSERVATION CONTEXT

4.3.5 indicators

college classroom or learning lab	microteaching or actual classroom
Given a role-playing context, the teacher will systematically analyze and evaluate the social participation skill performance of a peer role-playing a student by means of a prespecified set of criteria. Following data collection he or she will structure and conduct a discussion with the student such that he or she will have recieved the analytical and evaluative data and have a plan for improving future performance. A positive and minimally-threatening approach is to be used by the teacher.	The procedure will be the same except that real students will participate in the instruction.

SKILL: EVALUATES EFFECTIVENESS AND EFFICIENCY OF STUDENT PARTICIPATION SKILLS

4.4.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social participation task in a given context, the teacher will identify alternative skills and sequences of skills which can be used to accomplish the task, identify the costs of each alternative, and determine the probable relative efficiencies of the alternatives.	Given an interview with a student who has been working on a social participation task, the teacher will structure and conduct a discussion to determine how effective the student's use of social participation skills has been in accomplishing his or her task. In the discussion the teacher and student will also consider alternatives,

Effectiveness of skills cannot be determined in a classroom or lab setting.	costs, and probable relative efficiencies as previously described. The discussion will culminate in the formulation of a plan by the student to improve his or her effectiveness and efficiency in future similar situations.

The following matrix is designed to provide an overview of the skills statement section of the chapter. It can also be used to quickly identify the similarities and differences between the skills of the four teaching approaches. It is essentially the matrix of Figure 1 with the cells filled. The first column is labelled Common Skills. The skills appearing in those cells are relevant to all four of the previously discussed teaching approaches.

analyze and evaluate the student's social participation performance. The teacher will initiate the interview with a series of analytical questions designed to elicit essential data.

SKILL: PROVIDES STUDENTS WITH ANALYTICAL AND EVALUATIVE DATA REGARDING THEIR PERFORMANCE OF SOCIAL PARTICIPATION SKILLS IN A TEACHER OBSERVATION CONTEXT

4.3.5 indicators

college classroom or learning lab	microteaching or actual classroom
Given a role-playing context, the teacher will systematically analyze and evaluate the social participation skill performance of a peer role-playing a student by means of a prespecified set of criteria. Following data collection he or she will structure and conduct a discussion with the student such that he or she will have recieved the analytical and evaluative data and have a plan for improving future performance. A positive and minimally-threatening approach is to be used by the teacher.	The procedure will be the same except that real students will participate in the instruction.

SKILL: EVALUATES EFFECTIVENESS AND EFFICIENCY OF STUDENT PARTICIPATION SKILLS

4.4.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a social participation task in a given context, the teacher will identify alternative skills and sequences of skills which can be used to accomplish the task, identify the costs of each alternative, and determine the probable relative efficiencies of the alternatives.	Given an interview with a student who has been working on a social participation task, the teacher will structure and conduct a discussion to determine how effective the student's use of social participation skills has been in accomplishing his or her task. In the discussion the teacher and student will also consider alternatives,

Approach: Function:	COMMON	EXPOSITORY	STRUCTURED INQUIRY	UNSTRUCTURED INQUIRY	SOCIAL PARTICIPATION
GOALS & OBJECTIVES	0.1.1 Selects goals and objectives 0.1.2 Constructs goals and objectives 0.1.3 Sequences objectives 0.1.4 Justifies goals and objectives				
PLANNING	0.2.1 Locates, selects, and adapts materials 0.2.2 Invents materials 0.2.3 Sequences materials 0.2.4 Selects and sequences instructional procedures			3.2.1 Prepares materials 3.2.2 Utilizes local resources	4.2.1 Writes proposals for student participation experiences 4.2.2 Establishes cooperative relationships with individuals 4.2.3 Matches students to appropriate social contexts for participation experiences
INSTRUCTION		1.3.1 Introduces topics in an interesting manner 1.3.2 Makes structuring statements 1.3.3 Communicates the specific instructional objectives to students 1.3.4 Presents subject matter in oral or visual form 1.3.5 Presents subject matter beginning with generalizations and supporting these with discrete bits of data 1.3.6 Presents subject matter beginning with discrete data and moving to warranted generalizations 1.3.7 Provides for student recall and integration of prior knowledge 1.3.8 Provides appropriate practice 1.3.9 Provides for transfer of knowledge 1.3.10 Provides for remediation	2.3.1 Establishes open class climate 2.3.2 Confronts students with a social studies problem 2.3.3 Communicates instructional objectives to students 2.3.4 Structures or provides an organizing framework 2.3.5 Questions students 2.3.6 Guides students in discriminating between definitional, empirical, and evaluative issues 2.3.7 Accepts and reacts to student statements 2.3.8 Demonstrates and encourages the use of dimensions in value analysis 2.3.9 Challenges student value positions with analogies	3.3.1 Motivates students 3.3.2 Introduces/elicits and clarifies problem 3.3.3 Elicits and uses student reactions to the problem 3.3.4 Formulates and clarifies explicit problem statement 3.3.5 Elicits hypotheses 3.3.6 Facilitates student planning 3.3.7 Facilitates student data gathering 3.3.8 Elicits student hypothesis testing /generalization generation 3.3.9 Facilitates group process	4.3.1 Introduces students and those with whom they will work in the social context 4.3.2 Demonstration to train students for social participation skills 4.3.3 Uses simulation to train students for social participation skills 4.3.4 Conducts analytical and evaluative discussions with students after social participation 4.3.5 Provides students with analytical and evaluative data on their performance of social participation skills
EVALUATION	0.4.1 Pre-assesses students 0.4.2 Carries out formative and summative evaluation 0.4.3 Diagnoses student learning difficulties 0.4.4 Evaluates unintended student outcomes 0.4.5 Evaluates instruction				4.4.1 Evaluates the effectiveness and efficiency of student participation skills

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CHAPTER 7

TEACHING SKILLS IN MATHEMATICS INSTRUCTION

Frank K. Lester, Jr.[1]

Introduction

Traditionally, next to language arts, mathematics has been considered the most important subject in the elementary and secondary curriculum. Assuming that there are good reasons to warrant this high esteem, great care must be taken to insure that teachers receive the best possible training in mathematics and pedagogy.

Mathematics is unique in that its very nature facilitates a careful scrutiny of the most basic and important aspects of learning and teaching, which is not possible in other subject areas. The well-defined, easily observed skills and knowledge which must be developed and learned, and the sequential nature of much of school mathematics, have promoted the intensive study of lower level cognitive aspects of learning and teaching.

At the same time interest in higher cognitive processes such as concept formation and problem solving has been enhanced by the study of how children form mathematical concepts and develop mathematical problem solving ability. Indeed, it is perhaps in mathematics that we have learned the most about how children learn and how to provide the most effective instruction (Shulman, 1970). Hence, the identification of essential teaching skills may be less difficult in mathematics than in any other area. This fact does not suggest that the key teaching skills in mathematics are easily pinpointed. Even in an area which has been the medium for so much educational research, the task of delineating teaching skills is at best a complex and formidable endeavor.

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[1] The author is indebted to Professors Donald R. Kerr, John F. LeBlanc, and Paul R. Trafton for their assistance in preparing this chapter.

A brief analysis of the key components in deciding upon an appropriate instructional strategy may help to bring this point into focus. The process of bringing external cues and prior knowledges together to facilitate the choice of an instructional strategy involves at least four components: underlying knowledges, cue reception, decision-making, and action. (See Figure 1.).

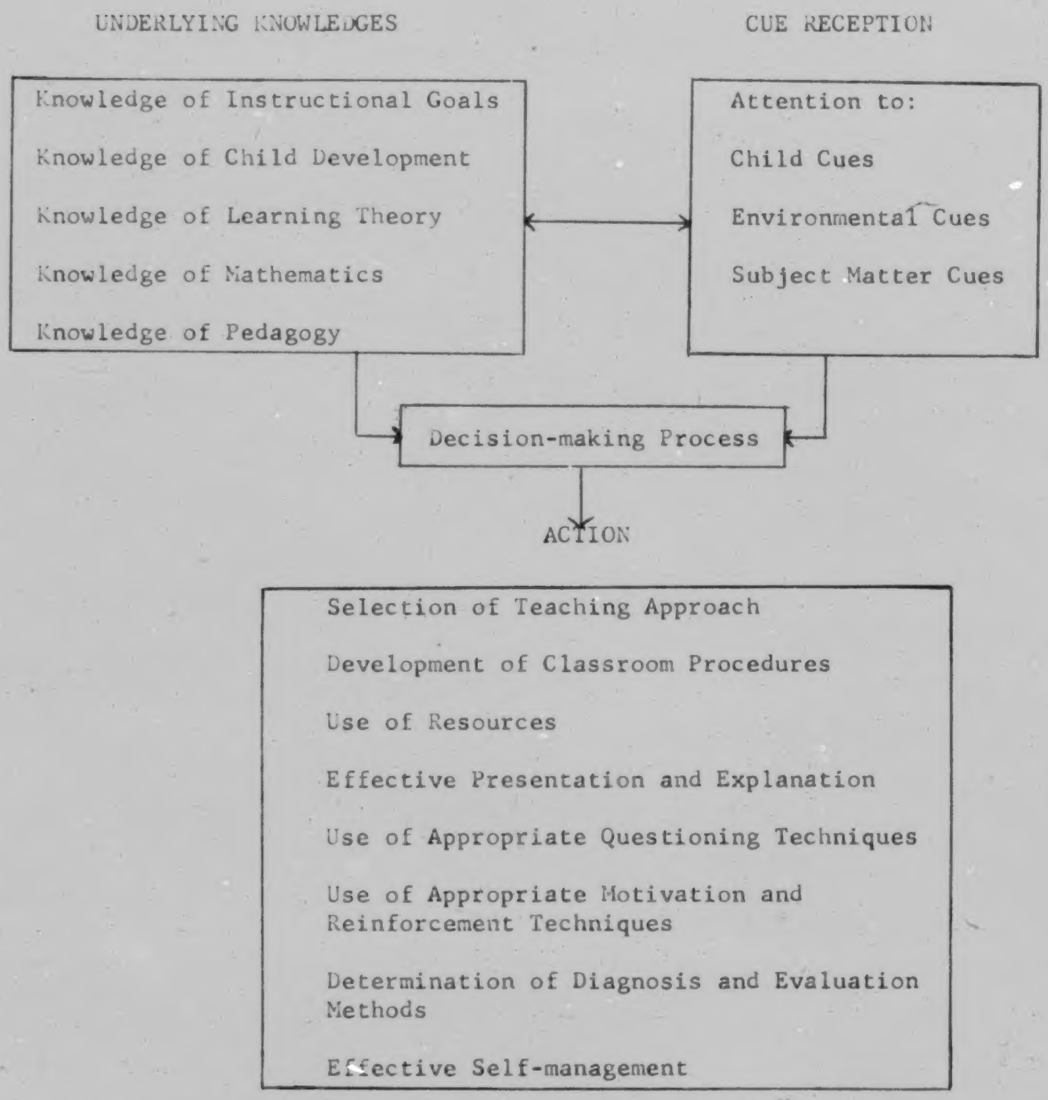
UNDERLYING KNOWLEDGES
Knowledge of Instructional Goals
Knowledge of Child Development
Knowledge of Learning Theory
Knowledge of Mathematics
Knowledge of Pedagogy
CUE RECEPTION
Attention to:
Child Cues
Environmental Cues
Subject Matter Cues
Decision-making Process
ACTION
Selection of Teaching Approach
Development of Classroom Procedures
Use of Resources
Effective Presentation and Explanation
Use of Appropriate Questioning Techniques
Use of Appropriate Motivation and Reinforcement Techniques
Determination of Diagnosis and Evaluation Methods
Effective Self-management

Figure 1. Key Components in Providing Appropriate Mathematics Instruction

The knowledge component includes such aspects as knowledge of instructional goals, knowledge of child development, knowledge of learning theory, knowledge of mathematics, and knowledge of pedagogy. It is expected that the level of needed expertise in each of these areas can be determined.

Cue reception refers to the teacher's attention to child cues, environmental cues, and subject matter cues. Although it may be impossible to train directly a prospective teacher to attend to these cues at the appropriate times and in an appropriate manner, it is possible to provide the teacher with experiences which point out the importance of this component.

The third component is decision-making. The process of making correct decisions based on a careful consideration of all available information is difficult to analyze. It is not clear how decision-making ability is best developed in the prospective teacher but certain experiences seem to be more effective than others.

The action component is the result of decisions made on the basis of information gained from the first two components. This phase of the instructional process involves the selection, development, and implementation of a teaching strategy and the subsequent evaluation of instruction and student learning. It is reasonable to expect that the prospective teacher can be made aware of and knowledgeable about each aspect of the action component.

Specific training and experiences related to each component of the instructional process can be provided and evidence of a certain level of skill with and knowledge about the various aspects of each component can be obtained. However, it is quite difficult to determine the type and degree of training which will best prepare teachers who not only have acquired a variety of skills, but also can integrate these skills into a sequence of instructional acts which make the study of mathematics an enjoyable and profitable experience for the learner.

The purpose of this chapter is to identify the competencies needed by every teacher in order to provide effective mathematics instruction. The focus will be on those skills which enable the teacher to make sound decisions about the instructional process in his or her mathematics classroom.

Goals of Mathematics Instruction

Before specific skills are considered, serious thought must be given to the goals of mathematics instruction. A critical consideration in establishing the goals of school mathematics is the pace of change in our society. Although change has always been a part of the human condition, we are now faced with the prospect that the pace of change will accelerate so rapidly that every part of life will be affected. Such rapid change makes it extremely difficult to prepare for the future since there is no precise way to predict what scientific and technological discoveries will be made. Collaterally, there is no sufficient way to learn now everything that will need to be known in the future about a subject like mathematics.

Today mathematical activity in such areas as engineering, the physical sciences, the medical sciences, the social sciences, the behavioral sciences, and business are so extensive that the need for a mathematically literate citizenry is highly important. Indeed it is clear that our culture is becoming increasingly "mathematized" and that mathematics will continue to be an important part of any school curriculum. The question is, "How can a school mathematics curriculum best prepare students to meet the demands of an increasingly more complex technology-centered society?" The answer seems to be that we will have to equip our students with an ability to learn things that no one yet knows.

A second critical consideration in establishing the goals of school mathematics is the knowledge we now have about how students learn and develop. A basic feature of this knowledge is that students learn most effectively when the learning material is presented in a way that takes advantage of their experiences, interests, and level of cognitive development, and when the key ideas of what is to be learned are identified for them.

Keeping in mind the preceding considerations, three goals become evident. The first goal is cultural in nature and involves the development of an awareness of the nature of mathematics as a legitimate human endeavor. It is important that the child be given the opportunity to become involved in the type of activities which characterize mathematics as an open, dynamic field of inquiry. This "awareness" is best developed by actually doing some mathematics which is more than arithmetic tedium or solving routine "word problems."

The second goal of school mathematics is to equip students with the skills to implement any career decision which is consistent with their interests and abilities. Attempts to achieve this goal have traditionally emphasized the acquisition of certain computational skills. The fact is, however, that we no longer need the skill to perform very complicated calculations; machines can do these much better than men. There is now a demand for people who can analyze a problem and devise a means of solving it, leaving the actual solution of the problem to a computer or similar machine. It seems that equipping students with the ability to implement career decisions is really a matter of finding the appropriate balance between developing "need to know now" skills and processes which involve mathematical thinking.

The third goal is to develop problem solving ability. In a functional sense, mathematics is a means for solving problems. Any curriculum which does not give serious, direct attention to developing problem solving ability in students is not satisfactory.

In this chapter any mention of problem solving refers to the process of coordinating previous experiences, knowledge, and intuition in an effort to determine an outcome of a situation for which a procedure for determining the outcome is not known. Thus, finding a correct answer to the question, "If the length of the hypotenuse of a right triangle is 10 inches and the length of one side is 7 inches, what is the length of the third side?" does not involve problem solving for most students who are familiar with the Pythagorean Theorem. However, for the student who is not familiar with this theorem, determining a correct answer to this question may involve problem solving of a complex nature.

Clearly, the changing goals of school mathematics imply a different role for the mathematics teacher. These goals suggest that the mathematics teacher of the future should give constant attention to developing children's problem solving ability, preparing children to deal with new situations, and instilling attitudes which are amenable to change. Let it suffice to say that mathematics curricula of the future will be concerned with the development of problem solving skills, real-world applications of mathematics, and the promotion of genuine understanding of the nature of mathematical ideas and the relationship of these ideas to one another.[2]

Approaches to Instruction.

Among the recommendations made for teacher training by the Conference on the K-12 Mathematics Curriculum (1973) was that "each teacher should be provided with the necessary information and skills to allow him or her to have available and be comfortable with multiple strategies."

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[2] Participants in the Conference of the K-12 Mathematics Curriculum, Snowmass, Colorado, June, 1973, were in unanimous agreement that future trends will be in this direction.

Assuming that the use of a variety of teaching approaches facilitates good mathematics teaching, the factors which influence the choice of teaching approach deserve careful consideration.

The teaching approach selected for use by a teacher is dependent on the goals of instruction, both long and short range. Other factors which influence the choice of a teaching model are student characteristics and the mathematical content to be taught. Clearly, the cognitive, affective and psychomotor development of students must also be given serious consideration before any choice of model is made. Finally, the mathematics to be taught plays a role in determining the appropriate model.

Three teaching approaches will be considered in this chapter: exposition, structured inquiry, and the unstructured inquiry. Clearly, these approaches are not the only ones which can be used but they adequately represent the salient features of both teacher-directed and student-directed approaches.

Teaching Functions.

Five major teaching functions will serve as guidelines for specifying essential teacher competencies. These functions include: explaining, questioning, reinforcing and motivating, and diagnosing and evaluating. Skills classified under these five functions play roles of varying importance depending on the instructional goals and teaching approach.

As the term suggests, planning refers to those aspects of the instructional process which precede actual implementation of a lesson or activity. The determination of goals and objectives, use of resources, teaching approach, and sequencing of instructional activities are among the tasks involved under this function.

Explaining, questioning, and reinforcing and motivating are functions which take place during the instructional act and involve direct interaction with students. Thus, the teaching approach used is the primary factor in determining the relative importance of each of these functions.

The fifth function, diagnosing and evaluating, includes the identification of student difficulties, prescription of remediation, formative and summative evaluation of student mathematical behavior, and assessment of the appropriateness and effectiveness of instruction.

Summary.

The intent of this chapter is to isolate and discuss the various skills which are essential for a teacher to have in order to provide effective mathematics instruction. Three dimensions are considered in determining these skills: goals of mathematics instruction, approaches to instruction, and teaching functions. Before beginning a discussion of specific teaching skills, these dimensions are reiterated:

Goals

1. To develop in the student an awareness of the nature of mathematics as a legitimate human endeavor.
2. To equip the student with the skills needed to implement any career decision which is consistent with his or her interests and ability.
3. To develop problem solving ability.

Approaches to Instruction

1. Expository
2. Structured inquiry
3. Unstructured inquiry

Teaching Functions

1. Planning
2. Explaining
3. Questioning
4. Reinforcing and motivating
5. Diagnosing and evaluating

As was mentioned earlier, the purpose is to determine those skills which prepare teachers to be confident and competent decision makers. Thus, instead of attempting to create an exhaustive list of essential teaching skills, the focus is on identifying a core of skills which enables the teacher to pull together the underlying knowledge about students, goals, mathematics, and pedagogy and various external cues to make sound decisions about instruction. It is upon this core of competencies that future teacher training programs in mathematics should be built.

The remainder of this chapter will contain two sections. First, the major teaching skills and skill indicators will be presented. The skills will be grouped under the five teaching functions. The final section will include a discussion of three approaches to teaching mathematics and the skills which are most important to each approach.

FUNCTION: PLANNING

SKILL: IDENTIFIES KEY IDEAS AND CENTRAL THRUST OF ACTIVITIES

0.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a unit of textbook materials for a particular grade level:	Given a remedial class, the teacher:
--identifies the main thrust of the materials and selects the	--focuses activities on major ideas in order to aid student understanding

key ideas around which the materials are developed

After viewing a film or videotape of a lesson presented by a teacher:

--identifies the key ideas

--identifies the central thrust

After viewing a film or videotape of an activity involving a small group of students:

--identifies the key ideas

--identifies the central thrust

--omits materials or activities which are not essential to the learning of the key concepts, processes and skills

For any unit of instruction the teacher:

--develops activities around key ideas

--identifies and follows a central thrust in the unit

SKILL: IDENTIFIES INSTRUCTIONAL GOALS OF A GIVEN CONTENT AREA

0.1.2 indicators

college classroom or learning lab	microteaching or actual classroom
For a given content area (e.g., numeration, function and relations): --consults scope and sequence charts, textbooks, or other sources for suggested major objectives --specifies 3 major instructional goals in terms of desired student behavior	As a part of a complete lesson or activity in a given area: --writes instructional objectives in terms of desired student behavior --identifies long range goals of a given content area (K - 8 or 9 - 12)

SKILL: DISTINGUISHES AMONG EXPLORATORY, DEVELOPMENTAL AND CLOSURE LESSONS/ACTIVITIES

0.1.3 indicators

college classroom or learning lab	microteaching or actual classroom
After viewing a film or videotape of a mathematics lesson/activity: --determines if the lesson/	In a microteaching situation: --plans and implements each of the three types of lesson/activities

activity was exploratory, developmental, or if closure on a topic was intended

--if exploratory, identifies the key ideas being explored

--if developmental, identifies the lesson/activity as being introductory, an extension of previous study, or designed to maintain a previously learned concept, process or skill

--if closure, identifies level of understanding or skill which is being sought

--identifies an appropriate type of lesson/activity for the next step in a sequence of lessons/activities

SKILL: PROVIDES RATIONALE FOR ORGANIZATION OF MATERIALS

0.1.4. indicators

college classroom or learning lab

Given a set of textbook materials:

--gives justification for the choice of topics, sequencing and method of presentation and explanation

--gives reasons for disagreement with organization of the materials

Given randomly ordered objectives for a unit of materials:

--orders objectives into an appropriate sequence and provides rationale for that ordering

microteaching or actual classroom

--justifies organization of lessons/activities on daily basis

--justifies organization of materials for a unit of instruction

Plans a lesson/activity for use with students and includes reasons for organization of the lesson with respect to:

--student characteristics

--objectives of the lesson/activity

--nature of mathematics involved

SKILL: PREPARES OR RECOGNIZES LONG RANGE, UNIT AND DAILY OBJECTIVES (COGNITIVE AND AFFECTIVE)

0.1.5 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of prepared materials: --identifies the long range, unit and daily objectives of those materials For a given content area and grade level: --writes long range objectives --writes unit objectives consistent with concepts, processes and skills to be included in the unit --writes daily objectives in an appropriate developmental sequence --plans a brief lesson/activity and identifies the objectives of the lesson/activity	

SKILL: DESIGNS AN INSTRUCTIONAL SEQUENCE CONSISTENT WITH INSTRUCTIONAL GOALS, TOPICS AND STUDENT CHARACTERISTICS

0.1.6

indicators

college classroom
or learning lab

Given a mathematical topic and objectives, designs lessons/ activities:

- --sequenced in a mathematically sound way
- --leading to desired student behaviors
- --appropriate for particular student characteristics

Given a unit of prepared instructional materials:

- --evaluates the appropriateness of sequencing with respect to goals, topics and student characteristics

Given a set of mathematical topics randomly ordered:

- --orders topics into an instructional sequence for a given grade level

After viewing a videotape or film of a mathematics lesson/activity:

- --evaluates the appropriateness of the sequencing of topics with respect to pedagogical and mathematical considerations

microteaching or
actual classroom

--provides rationale for sequencing of lessons/activities

SKILL: DESIGNS A SEQUENCE OF LESSONS/ACTIVITIES REFLECTING A TRANSITION FROM CONCRETE TO ABSTRACT

0.1.7 indicators

college classroom
or learning lab

Given a particular mathematical concept, process or skill:

--describes more than one manipulative materials which illustrate that idea

--describes more than one foundational activities for developing that idea

--describes more than one pictorial or diagrammatic materials illustrating that idea

--identifies the most appropriate point at which to introduce the idea abstractly and gives justification for the choice

microteaching or
actual classroom

For a given mathematical concept, process or skill designs lessons/activities which:

--include concrete embodiments of that idea

--include representational embodiments of that idea

--indicate an appropriate transition from concrete to abstract

--take into consideration the students' readiness for abstraction of the concepts involved

SKILL: PLANS UNITS REFLECTING CURRENT RESEARCH AND THEORY

0.1.8 indicators

college classroom
or learning lab

Evaluates an observed demonstration lesson on the basis of:

--agreement with particular child development and learning theories

--research supporting the instructional strategy used

Given a particular theory of learning or instruction:

--describes a lesson/activity which demonstrates adherence to that theory

microteaching or
actual classroom

--assesses readiness of students to learn certain concepts in the context of particular learning theories and plans units accordingly

--distinguishes among concept formation, skill building, and process learning and provides a rationale for the choice of instructional strategies used with each

SKILL: SELECTS AND DESIGNS ACTIVITY-ORIENTED TECHNIQUES AND ACTIVITIES TO MOTIVATE STUDENTS AND PROVIDE NEEDED PRACTICE OF SKILLS

0.1.9 indicators

college classroom or learning lab

Given a concept, process or skill:

--cites at least 3 sources of materials which might have ideas for stimulating interest and appreciation

--describes more than one activity which allows for direct student involvement in learning that topic

--describes more than one technique for relating that topic to student experiences

--describes more than one technique for relating that topic to student interests

microteaching or actual classroom

During the planning of a unit of instruction:

--designs student-centered activities which rely on student experiences and interests

--identifies alternate activities for that topic

--includes enough flexibility to allow for student divergent inquiry

SKILL: PLANS THE USE OF AUDIO-VISUAL RESOURCES APPROPRIATE FOR A GIVEN SITUATION

0.1.10 indicators

college classroom or learning lab

Given an instructional objective for a mathematics topic:

--suggests a concrete and a semi-concrete aid that relates to that topic

--cites at least three sources of material which contain alternative approaches or related ideas

--prepares a variety of media and instructional material

microteaching or actual classroom

--plans effective use of chalkboard, overhead projector, etc.

--designs duplicated materials and overhead transparencies to facilitate desired student behavior

--plans bulletin boards, audio- and videotapes, films, filmstrips, dry mounts, etc. to facilitate instruction

--demonstrates ability to operate a variety of media equipment

Given a particular audio-visual aid and package of materials:

--describes types of instructional goals it facilitates

--describes how that aid facilitates instruction

SKILL: PLANS MANIPULATIVE OR PICTORIAL MATERIALS APPROPRIATE FOR THE MATHEMATICAL TOPIC AND GRADE LEVEL INVOLVED

0.1.11 indicators

college classroom or learning lab	microteaching or actual classroom
Given manipulative materials such as counters, rods, geoboards:	--includes appropriate manipulative and pictorial aids in planning instruction
--describes appropriate uses and limitations of each	--in remedial instructional situations relates content to various manipulative or pictorial models
--justifies the selection of materials for use in developing a concept, process or skill	--indicates points at which a shift from manipulative to pictorial aids may be appropriate for a particular topic and grade level
Given a particular mathematical concept, process or skill:	
--describes two or more manipulative or pictorial devices to facilitate student learning	
--describes how a transition can be made from concrete, to pictorial, to abstract	

FUNCTION: EXPLAINING

SKILL: IMPLEMENTS INSTRUCTION FOSTERING A VARIETY OF INTERACTION STYLES: STUDENT-STUDENT AND STUDENT-TEACHER

0.2.1 indicators

college classroom or learning lab

--discusses various approaches to classroom interaction with respect to content and instructional goals

After viewing films or videotapes of instruction involving a variety of interaction styles:

--identifies the merits and limitations of each style

--compares and contrasts the various styles

--determines the conditions under which each style would be effective

microteaching or actual classroom

--places students into flexible groups based on developmental, intellectual and emotional considerations

--maintains openness and honesty in dealing with students

--encourages student participation and divergent points of view

--implements instruction of the following types: games, independent inquiry, small group discussion, teacher-guided inquiry, lecture-demonstrated

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SKILL: ADJUSTS PRESENTATIONS OR EXPLANATIONS IN ACCORD WITH STUDENT CHARACTERISTICS, LEVEL OF ABSTRACTION AND GENERALIZATION AND CLASSROOM ENVIRONMENT

0.2.2 indicators

college classroom or learning lab

After viewing a film or videotape of a lesson/activity:

--identifies situations which could necessitate adjustment in presentation or explanation

--identifies opportunities for adjusting the presentation or explanation which were not used

microteaching or actual classroom

--continually assesses the effectiveness of a presentation or explanation by analyzing the degree to which it is based on a consideration of student characteristics and topic

--is receptive to classroom cues indicating a need to alter a presentation or explanation

--identifies appropriateness or effectiveness of adjustments which were made

While viewing a film loop of a critical classroom situation:

--reacts spontaneously and indicates immediate action which is needed

SKILL: RELATES TOPICS TO APPLICATIONS AND OTHER REAL-WORLD CONTEXTS

0.2.3 indicators

college classroom
or learning lab

For a given mathematics topic:

--identifies an application of that topic in more than one field

--relates the topic to everyday experiences of students of a given grade level and socio-economic background

--identifies and takes advantage of opportunities to make real-world situations more tractable by applying mathematics

microteaching or
actual classroom

--asks questions that bring out the mathematical potential in a situation

--explains topics in a context which is consistent with student everyday experiences

--applies the topic to real-world situations whenever possible

--encourages students to interpret physical situations mathematically

--provides students with a variety of situations in which to apply their problem solving skills

SKILL: RELATES TOPICS TO STUDENTS' PREVIOUS MATHEMATICS EXPERIENCES, KNOWLEDGES AND SKILLS

0.2.4 indicators

college classroom
or learning lab

For a given mathematical topic and grade level:

--identifies previously studied mathematical topics related to the given topic

microteaching or
actual classroom

--explicitly points out the relationship between a given topic and previously studied topics

--presents lessons/activities which facilitate student awareness of the inter-relatedness among various topics

--studies scope and sequence charts to gain awareness of the relation of that topic to other topics (K - 8) --identifies those mathematical aspects (content, knowledge, skills) which are prerequisite to new learning	--implements lessons/activities which are sequenced in a pedagogically and mathematically sound way

SKILL: ORGANIZES EXPLANATIONS AROUND KEY POINTS OF A LESSON

0.2.5 indicators

college classroom or learning lab	microteaching or actual classroom
Given a prepared lesson/activity: --identifies the key points After viewing a film or videotape of a lesson/activity: --identifies the key points --plans lessons/activities and points out the key points	--maintains focus on the key points of a lesson in order to avoid student confusion or misdirection --organizes student-directed activities in such a way that students focus on key points

SKILL: INTEGRATES MATHEMATICAL TOPICS WITH TOPICS FROM OTHER CONTENT AREAS

0.2.6 indicators

college classroom or learning lab	microteaching or actual classroom
Given a mathematical topic and grade level: --identifies two or more applications of that topic to two or more other content areas --identifies the relationship between the topic and some topic in two or more other content areas (e.g., use of statistics in social science; geometry and art)	--points out the uses of particular mathematical topics in other content areas whenever appropriate --encourages students to look for applications of mathematics in other content areas --works closely with teachers in other areas (7 - 12) or resource teachers (K - 6) to identify relationships between mathematics and other areas

Given a content area different from mathematics: --states at least two topics from that area which have direct relationship to mathematics	--collects and makes available resources and references which describe applications of and relationships between mathematics and other areas

FUNCTION: QUESTIONING

SKILL: IDENTIFIES AND CONSTRUCTS VARIOUS QUESTION TYPES

0.2.7 indicators

college classroom or learning lab	microteaching or actual classroom
Demonstrates question types involving different levels of cognitive understanding (see for example Bloom's Taxonomy; Bloom, 1956) by: --writing a question of a given type related to a given topic --listening to, reading, or viewing a teacher-student dialogue, and preparing a summary sheet of question types	--gives direct attention to planning the use of different question types in lessons/activities --is aware of and uses question types involving different cognitive levels
Demonstrates questioning techniques such as clarifying, prompting and redirecting (see Orme, 1973) by: --identifying particular questioning techniques after reading, listening to or viewing a teacher-student dialogue --citing an example of each questioning technique --prepares a lesson/activity in which 50% or more of the questions are at the application level or higher	

SKILL: USES APPROPRIATE QUESTIONING TECHNIQUES TO ATTAIN SPECIFIC OBJECTIVES

0.2.8 indicators

college classroom
or learning lab

Views a film or videotape of a demonstration lesson and:

--evaluates the appropriateness of the questioning techniques used with respect to: number of higher level questions, balance between reflective and factual questions, clarity and effectiveness

microteaching or
actual classroom

--develops and implements inductive and deductive question sequences

--devotes substantive amount of development time to questioning

--asks open-ended questions both of individuals and the class

--maintains appropriate balance between reflective and factual questions

--states questions clearly and unambiguously

--uses questions to redirect and refocus student attention to a specific objective

--uses questions to clarify, prompt or promote critical awareness

--changes the questioning pattern used to suit the instructional approach used (e.g., more analysis questions in structured inquiry, more divergent questions in unstructured inquiry and more application questions in exposition)

SKILL: USES APPROPRIATE QUESTIONING TECHNIQUES IN DEALING WITH INCORRECT STUDENT RESPONSES, STUDENT MISUNDERSTANDING, OR MISDIRECTION

0.2.9 indicators

college classroom
or learning lab

Views a film or videotape of a lesson/activity involving incorrect student responses, student misunderstanding or misdirection and:

--evaluates the lesson/activity

microteaching or
actual classroom

Uses questioning techniques to:

--determine a student's level of understanding an idea

--determine the nature of a student's difficulty with respect to the appropriateness of the teacher action taken

--suggests alternate ways of dealing with the sitation involved

Given a mathematical topic and an area of possible student difficulty:

--constructs a questioning sequence to deal with the difficulty

--redirect or refocus a student's attention to a specific objective

Accepts an incorrect student response and builds on the response

Avoids criticism of a student for giving an incorrect response

Identifies areas of possible student difficulty prior to implementing instruction and directs questions to deal with those difficulties

FUNCTION: REINFORCING AND MOTIVATING

SKILL: PROVIDES CONTINUAL FEEDBACK TO STUDENTS ON PROGRESS IN UNDERSTANDING CONCEPTS AND PROCESSES AND DEVELOPING SKILLS

0.2.10 indicators

college classroom or learning lab

Given a set of objectives and sequence of lessons and activities comprising a unit of instruction on a mathematical topic:

--denotes points within the instructional sequence at which formal feedback on progress should be given

--identifies an acceptable level of achievement of objectives at various points in the instructional sequence

microteaching or actual classroom

--apprises students of the purpose and objectives of a lesson/activity

--apprises students of the purpose and objectives of a unit of instruction

--informs students at regular intervals of their progress toward attaining specified objectives

--avoids open criticism of a student's lack of progress toward achieving specified goals

--avoids aversive feedback which might discourage students from attempting to attain specified objectives

SKILL: PROVIDES POSITIVE REINFORCEMENT TO STUDENTS REGARDING THEIR MATHEMATICAL BEHAVIOR

0.2.11 indicators

college classroom
or learning lab

Given a film or video tape of student behavior during a mathematical task:

--reinforces/ignores student mathematical behavior when appropriate and justifies choice of action

--identifies techniques for eliminating undesirable mathematical behavior

When confronted with various 'critical incident' situations during a mathematics lesson/activity:

--supplies appropriate reinforcers to deal with the situation

--indicates means of avoiding undesirable situations

microteaching or
actual classroom

--spontaneously rewards and encourages desired behavior on a mathematical task

--apprises student of incorrect mathematical behavior and indicates desired behavior

--avoids inattention to undesirable mathematical behavior

SKILL: DEMONSTRATES ENTHUSIASM FOR TEACHING MATHEMATICS AND INCULCATES ENTHUSIASM IN STUDENTS FOR INVESTIGATING MATHEMATICAL IDEAS

0.2.12 indicators

college classroom
or learning lab

Given a film or videotape of a mathematics lesson/activity:

--appraises level of teacher enthusiasm

--suggests ideas for increased overt display of enthusiasm

microteaching or
actual classroom

--displays excitement for teaching mathematics

--participates in mathematical activities with students

--encourages a variety of approaches to solving problems

For a given mathematical topic:

- --describes two or more foundational, student-centered activities for that topic
- --cites two or more sources of material containing ideas for stimulating student interest
- --designs two or more activities for use by students independent of the teacher

--encourages divergent inquiry when appropriate

--displays enthusiasm for student-initiated inquiry

--includes mathematical materials and activities which lend themselves to active exploration

--includes materials and activities which can be used by students independent of the teacher

SKILL: DEMONSTRATES KNOWLEDGE OF AND APPLIES TECHNIQUES FOR REINFORCING AND MOTIVATING DESIRED STUDENT BEHAVIOR

0.2.13 indicators

college classroom
or learning lab

For a given mathematical topic:

- --describes two or more alternative procedures for motivating students
- --prepares a behavior modification plan for dealing with specified student behavior
- --designs lessons/activities which include specification of reinforcement techniques to be used and justifies choices

For a given 'critical incident' situation:

- --describes non-threatening, non-punitive techniques for dealing with the situation

microteaching or
actual classroom

--uses non-threatening, non-punitive techniques in dealing with undesirable student behavior

--spontaneously rewards and encourages desired intermediate and terminal behavior

--uses alternative procedures for motivating students

FUNCTION: DIAGNOSING AND EVALUATING

SKILL: IDENTIFIES STUDENT PROCESS OR SKILL ERRORS AND ERROR PATTERNS

0.3.1

indicators

college classroom
or learning lab

Given a sample of a student's written work:

- --generates a hypothesis concerning possible error patterns
- --constructs a diagnostic activity or test to test the hypothesis

After viewing a film or videotape of a student mathematical activity:

- --generates a hypothesis concerning possible error patterns
- --constructs a diagnostic activity or test to test the hypothesis

microteaching or
actual classroom

During planning of a lesson/activity:

- --identifies possible areas of difficulty
- --lists the types of student process or skill errors which might arise

Checks student progress toward understanding of concepts and processes and development of skills frequently during lessons/activities

Takes immediate action toward eliminating difficulties as soon as they are identified

Uses questioning and observation techniques as well as written tests to identify student difficulties

SKILL: DEVISES APPROPRIATE DIAGNOSTIC ACTIVITIES TO ISOLATE STUDENT DIFFICULTY AREAS

0.3.2

indicators

college classroom
or learning lab

For a given mathematical topic and grade level:

- --devises an activity to serve as a diagnostic tool
- --describes various classroom procedures for diagnosing student difficulties (e.g., questioning)

microteaching or
actual classroom

Uses questioning and observation techniques to isolate student difficulties

Designs games and other student-centered activities to serve as diagnostic instruments

Designs written diagnostic tests to isolate student difficulties

After viewing a film or videotape of a student activity:

--devises a diagnostic activity to isolate student difficulties

SKILL: PRESCRIBES APPROPRIATE REMEDIATION BASED ON RESULTS OF DIAGNOSIS

0.3.3 indicators

college classroom or learning lab

Given a list of student conceptual, process or skill errors for a particular grade level:

--describes remediation activities for each area of difficulty

Given alternative remediation procedures:

--selects one or more procedures and defends choice

microteaching or actual classroom

--prescribes remediation of student difficulties based on results of self-made diagnostic testing

--prescribes remediation of student difficulties based on interpretation of standardized test results

SKILL: DEVELOPS, USES AND INTERPRETS INSTRUMENTS FOR EVALUATING COGNITIVE AND AFFECTIVE ASPECTS OF STUDENT MATHEMATICAL BEHAVIOR

0.3.4 indicators

college classroom or learning lab

Given a prepared unit of mathematics instruction for a specified grade level:

--develops diagnostic instruments, both formal and informal

--develops attitudinal surveys regarding student interest and motivation during the instructional unit

--develops achievement instruments, both formative and summative

microteaching or actual classroom

--evaluates student performance based on predetermined objectives

--develops indicators of desired student cognitive and affective behavior during times of no teacher-student interaction

--devises alternative systems for evaluating student behavior

--aids students in evaluating their own progress

--designates points at which each type of instrument should be used during the unit

--identifies alternative evaluation instruments both formal and informal

Given the results of an instrument measuring (1) readiness, (2) achievement, (3) attitudes with respect to a specified topic:

--interprets readiness results and identifies prerequisite skills which are not present

--interprets readiness results and identifies conceptual prerequisites which have not been attained

--identifies the degree to which mastery of the objectives has been attained

--designates remediation which is needed

--identifies interest and motivation students have regarding mathematical topics

--interprets results of standardized tests

SKILL: DISTINGUISHES BETWEEN FORMATIVE AND SUMMATIVE EVALUATION

0.3.5 indicators

college classroom or learning lab

For a given mathematical concept, process or skill:

--constructs sample test items to serve the following purposes respectively: (1) diagnostic instrument; (2) readiness inventory; (3) measure of achievement; (4) assessment of attitudes and perceptions toward that topic

Compares and contrasts formative and summative evaluation instruments

microteaching or actual classroom

--administers appropriate formative evaluation instruments before and during instruction

--administers appropriate summative evaluation instruments after instruction

SKILL: DESIGNS AND USES VARIOUS INFORMAL EVALUATION METHODS

0.3.6 indicators

college classroom
or learning lab

For a given mathematical concept, process or skill:

- --outlines a procedure for an informal evaluation of student progress

After viewing a film or videotape of a mathematics lesson/activity:

- --identifies one or more method of informal evaluation which could have been used

Describes the attributes, advantages and limitations of rating scales, observation techniques, interview techniques and other informal evaluation techniques.

For a given description of a mathematics lesson/activity and its objectives:

- --describes at least one method of informal evaluation to be used during the lesson/activity

microteaching or
actual classroom

--uses questioning techniques to gain information on student behavior with respect to predetermined objectives

--uses observation techniques to gain information on student behavior with respect to predetermined objectives

--gains information on student behavior through individual counseling

SKILL: DESIGNS, USES AND INTERPRETS INSTRUMENTS EVALUATING THE APPROPRIATENESS AND EFFECTIVENESS OF INSTRUCTION

0.3.7 indicators

college classroom
or learning lab

Videotapes a lesson/activity designed and implemented by the teacher and:

- --uses some systematic observation technique (e.g., Flanders interaction analysis) to analyze instruction

microteaching or
actual classroom

--frequently examines objectives, materials and strategies for an instructional unit in order to isolate those areas which may need alteration

identifies elements in his/her own teaching which need improvement

--evaluates the appropriateness of materials and strategies used with respect to student attainment of objectives and instructional approach intended by the teacher

--identifies strengths in his/her teaching

--plans and engages in continual professional education

--uses systematic observation techniques to analyze the appropriateness of instruction

--seeks out and accepts advice of colleagues regarding instructional techniques

--identifies cultural or other biases in his/her own belief system which might influence instruction

Teaching Skills Grouped Under Approaches to Teaching Mathematics

Three approaches to teaching mathematics were identified in the first section. It was mentioned that these approaches were chosen because they represent both teacher and student-directed approaches to instruction. In this section it will be pointed out that the specific characteristics of these approaches require special skills on the part of the teacher. The reader is cautioned that no suggestion is being made that the skills listed under a particular teaching approach are uniquely important to that approach alone. Instead, the intent is to emphasize that certain skills are particularly important within a specific approach. It must also be pointed out that several of the skills identified in this section are the same as those listed in the preceding section.

I. Expository Approach

Formally, an expository approach is one in which the teacher communicates to students the knowledge and ways of behaving to be acquired. Although the focus is often on the transmission of information to the student by means of direct presentation by the teacher, exposition can be used in teaching higher cognitive processes and affective processes, such as attitudes. Typically, a teacher, or some learning aid (film, textbook, etc.), communicates and explains facts, concepts, or processes to a group of students. The large group lecture classes which are so common in many colleges and universities usually use an expository approach. However, this approach is not limited to use with large groups only. An expository approach of one sort or another is used whenever time-cost considerations are important and seems more appropriate for students in Piaget's formal operational stage than the concrete stage. (See Ausubel, 1964 for a discussion of the usefulness of exposition).

There are at least four areas in which an expository approach is most likely to be used in teaching mathematics:

1. Presenting facts or ideas in as efficient a manner as possible (e.g., definitions, rules).
2. Reviewing familiar material and explanation or clarification of certain points.
3. Providing a summary of material in order to gain closure on a topic or concept.
4. Illustrating algorithmic techniques or other techniques such as problem solving processes which a student can imitate.

Example: If the teacher's aim is to present facts, concepts, definitions, rules, formulas and the like in an efficient manner, the expository approach may be appropriate. An example is often seen in ninth grade algebra. Suppose the class has been studying quadratic functions and equations: factoring, completing the square, solution of quadratic equations, etc. Furthermore, suppose the teacher decides that the primary objective of studying quadratic equations is to be able to solve any quadratic equation of the form $ax^2 + bx + c = 0$. With this objective in mind he decides to derive the quadratic formula for the class. It should be pointed out that, although the teacher presents a derivation to the class, the presentation relies on the students' previous experiences with factoring, completing the square, and other related topics. Thus, a serious attempt is made to present the derivation in a meaningful way to the class. Notice that the instructional approach was contingent upon the instruction objective.

Several factors may have influenced the teacher's choice of approach. The decision may have been based on the belief that although it is important that the students know the quadratic formula in order to solve certain equations, it would take too much time to derive through an inquiry approach. Other considerations might be that the teacher does not view the derivation of the quadratic formula as important or that spending time trying to 'discover' the quadratic formula might distract the students' attention from a more important objective. Of course, there also is the possibility that the teacher may think that deriving the quadratic formula by the students would be too difficult and not worth the effort. The main point to be made is that the teacher based the choice of teaching approach on the instructional objective which had been identified. Since the goal was to equip the students with a useful formula and not to make them aware of some mathematical process or introduce a key mathematical concept, the decision to use an expository approach seems appropriate.

Specific Skills Within the Expository Approach

Function 1. Planning

Since the expository approach focuses on the transmission of knowledge by means of direct presentation by the teacher, it is essential that the selection and sequencing of instructional goals be given careful consideration. Since efficiency is often desired, the teacher must be sure that goals are carefully thought out if efficient instruction is to take place. The skills which are associated with this function relate primarily to goal selection and sequencing of materials.

Skills. Of particular importance are the following:

1. Identifying the key ideas and central thrust of each lesson.
2. Distinguishing among exploratory, developmental and mastery lessons.
3. Providing a rationale for the organization of the presentation.
4. Writing of terminal, unit and daily objectives.
5. Designing an appropriate instructional sequence: consistent with goals and reflecting a transitional from concrete to abstract.
6. Planning of lessons reflecting current research and theory.

Functions 2, 3 & 4. Explaining, Questioning, and Reinforcing and Motivating

It is at this stage that the expository approach becomes clearly different from the two inquiry approaches. Within this approach the teacher must carefully select a method of presentation which will be clearly understood by as many students as possible. Also, since the student is not actively participating in some sort of inquiry process there may be little intrinsic motivation to learn. Thus, a large part of the student's motivation must come from what the teacher does. That is, the teacher is the main source of motivation within an expository approach, whereas in a structured inquiry approach motivation comes from a combination of the teacher and the material to be learned and in unstructured inquiry the material and the learner are the primary motivational factors. Since the nature of exposition delegates a serious responsibility to the teacher to design effective means of directly transmitting information to students, the key skills deal with sequencing of topics, questioning techniques, and perhaps most importantly, ability to adjust presentations and explanations to the level of students' understanding.

Skill 1. Sequencing of topics and materials

a. Sequences a set of mathematical topics in a way which is consistent with the structure of the mathematical system being considered.

b. Developmentally sequence a set of mathematical topics in a way which is consistent with the student's stage of intellectual development.

c. Distinguish among and design introductory, extension, maintenance and reinforcing, and mastery lessons.

d. Illustrate a hierarchial learning model for a major topic (e.g., addition of rational numbers).

Skill 2. Designs and implements effective explanations of mathematical concepts, processes and skills through direct presentation to the students; more specifically:

a. Gives alternate explanations of a given concept, process or skill at a particular level.

b. Interprets real-world situations mathematically.

c. Uses correct mathematical terminology in writing and speaking.

d. Relates explanations to the previous experiences of the students.

Skill 3. Uses appropriate questioning techniques in order to:

a. Determine the student's level of understanding of a mathematical idea.

b. Determine the nature of a student's difficulty in understanding a mathematical idea.

c. Guide the student to a point where he is able to discover a mathematical generalization or idea or to develop a deeper awareness of a mathematical principle.

Skill 4. Adjusts presentations or explanations of mathematical topics in accord with student characteristics (such as ability level, age and previous related experiences) and the level of abstraction, generalization, and sophistication of the mathematical topic under consideration.

Skill 5. Motivates students to learn mathematics by demonstrating enthusiasm for mathematics during the exposition of a topic, by selecting appropriate instructional aids (e.g., films, filmstrips, pictures, diagrams) to facilitate student understanding, and by relating the mathematical ideas involved to the students' experiences.

Function 5. Diagnosing and Evaluating

The primary focus of this function within the expository approach is on formal evaluation of student progress and understanding. Whereas, diagnosis may play a major role in determining the level of abstraction or generalization or a presentation, it generally is not used for purposes of individualizing instruction or determining the specific deficiencies of students. Also, since interaction between the teacher and students is minimized with an expository approach, informal evaluation of student behavior is rarely feasible thus necessitating the use of formal evaluation instruments, usually paper and pencil tests. The only other means of assessing student progress and understanding is through questioning during a lesson or checking student assignments.

Skill 1. Designs appropriate methods of assessing student progress, skill and understanding for the following purposes:

a. Assessment of the degree of mastery of a mathematical concept, process or skill.

b. Assessment of attitudes and perceptions toward a particular topic.

c. Diagnosis of student difficulties.

d. Determination of prerequisite mathematical skills and abilities.

Skill 2. Administers and evaluates instruments designed to measure specific student cognitive behaviors.

II. Structured Inquiry

A structured inquiry approach is designed to guide the student through a series of activities which will ultimately result in the attainment of certain predetermined objectives. This approach allows the student to become an active participant in mathematical activities which have been carefully selected by the teacher. The student is given the feeling of being involved in independent inquiry and exploration but at the same time the teacher has some control over the direction of his inquiry. An important feature of this approach is that it adds flexibility in the sense that unexpected results may occur. That is, there is the possibility of the student blazing a trail into unknown territory, while at the same time the teacher maintains enough control in the inquiry process to prevent unwarranted floundering or misdirection by the student.

Among the areas in which a structured inquiry approach is appropriate are:

1. Discussions or inquiry in which teacher-student and student-student interaction are desirable.
2. Areas in which the teacher desires the student to gain experience in using a particular problem solving strategy or other mathematical thinking process such as searching for relationships and pattern finding.
3. Introduction to unfamiliar concepts or processes when closure is not necessary.
4. Activities designed to lead the student through a chain of reasoning (both inductive and deductive) to draw conclusions about a mathematical idea.

Example: A structured inquiry approach is often successfully used to introduce new concepts when no closure is necessary. An example from a fourth grade class can illustrate this approach. Factors and multiples of counting numbers are often introduced in the fourth grade and can provide opportunities for students to do independent inquiry which may lead to a clearer understanding of these number properties. Suppose the teacher wants the students to gain an understanding of prime numbers and decides that the best way to introduce the class to prime numbers is by designing a concrete activity using the geoboard. Briefly, the activity involves the following procedures (refer to Figure 2):

Stage 1: Using the geoboard and one rubber band, have the students form a rectangle having one square unit of area (Note: There are some obvious prerequisite skills and knowledge involved here). Can a different rectangle be made that has the same area? (i.e., length and width are different)

Stage 2: Have the students do the same thing for rectangles of area 2, 3, 4, 5, etc.

At each stage the students record their findings in table form on a prepared sheet (see Figure 3). After recording results of their investigations for counting numbers 1 through 12, the children are asked to look at their tables to see if there are some numbers which are like others with respect to the number of different rectangles having a certain area.

The objective may be to lead the students to a realization that a prime number, P, is a counting number that can be represented by exactly two rectangles having area P square units. However, this activity is designed to allow the students to look for a variety of number relationships. For example, in addition to classifying counting numbers as prime or composite (1 is in still another class), the students may observe that all numbers that can be represented by exactly three rectangles are perfect squares (4, and 9 in Figure 3). They may want to investigate the possibility that this is a necessary condition for determining if a number is a perfect square, (it is not, of course). Thus, in addition to guiding the students toward a predetermined objective, they have an opportunity for independent investigations.

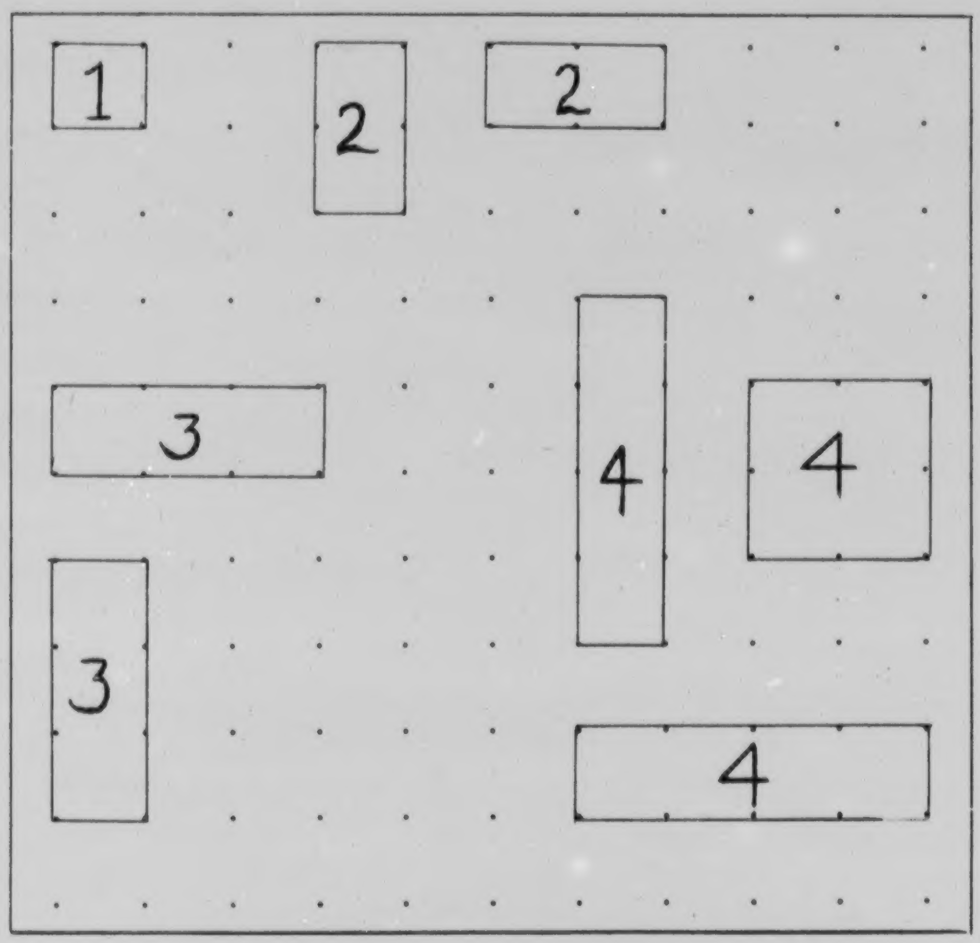

Figure 2. Geoboard illustrating all rectangles of area 1,2,3, and 4.

No.	Dimensions	No. of Rectangles
1	1 by 1	1
2	1 by 2, 2 by 1	2
3	1 by 3, 3 by 1	2
4	1 by 4, 4 by 1; 2,2	3
5	1,5; 5,1	2
6	1,6; 6,1; 2,3; 3,2	4
7	1,7; 7,1	2
8	1,8; 8,1; 2,4; 4,2	4
9	1,9; 9,1; 3,3	3
10	1,10; 10,1; 2,5; 5,2	4
11	1,11; 11,1	2
12	1,12; 12,1; 2,6; 6,2; 3,4; 4,3	6

Figure 3. Sample student record of observations from geoboard

Specific Skills Within the Structured Inquiry Approach

Function 1. Planning

Structured inquiry approach to teaching mathematics encourages active student involvement in the instructional process under the guidance of the teacher. Thus, an important feature of this approach within this function is the ability of the teacher to establish goals and objectives which can be operationally defined in terms of expected student behavior. In this way the student is better prepared to identify the direction of his inquiry and can self-assess his progress. Although the ultimate goals may involve several product-oriented objectives, process objectives are always included in the sense that the student is learning mathematics by doing mathematics. That is, the teacher must be keenly aware of the strategies and skills which the student is developing in order to effectively monitor his activities and help him acquire correct strategies and techniques. Hence, in addition to the basic decision-making skills which must be acquired, the teacher must have the following skills:

Skill 1. Translates objectives into words which are familiar to students.

Skill 2. Identifies those aspects of a planned mathematics activity which will be accessible to student exploration and those which will require considerable clarification or direct explanation by the teacher.

Functions 2, 3 & 4. Explaining, Questioning, and Reinforcing and Motivating

Within this approach the teacher is an organizer of student understanding of concepts and processes and a facilitator of student development of skills. Since the focus is on student involvement in teacher guided inquiry much attention must be given to the development of activities which will enhance this involvement. Also, the teacher must constantly attend to cues regarding student attainment of specified goals. While less emphasis is placed on explaining than in an expository approach, questioning skills and reinforcement skills play a prominent role.

Skill 1. Designs and implements mathematical activities which promote student inquiry by:

a. relating topics to real-world contexts.

b. relating topics to students' previous mathematical experiences.

c. relating topics to students' interests.

Skill 2. Designs and implements mathematical activities which are sequenced in a way which:

a. is mathematically sound.

b. will lead to desired student understanding of skill with a minimum of teacher prompting and redirecting.

c. best illustrates the features of certain mathematical thinking processes and relationships among concepts.

Skill 3. Designs and implements mathematical activities which are appropriate for:

a. initially introducing a concept, process or skill.

b. extending student skill in or understanding of a concept or process.

c. reinforcing and maintaining a certain level of understanding or skill.

d. developing mastery of a skill or a deep understanding of a skill or process.

Skill 4. Identifies and anticipates student difficulty or misdirection during the conduct of an activity and can take appropriate action to provide assistance.

Skill 5. Redirects a student's inquiry by use of appropriate questioning techniques or can refocus the student's attention on essential ideas when the need arises.

Skill 6. Uses appropriate reinforcement techniques (both verbal and non-verbal) to encourage student investigation during an activity.

Function 5. Diagnosing and Evaluating.

Informal evaluation of student behavior plays a more important role in a structured inquiry approach than in an expository approach. While the teacher may still rely on formal testing instruments to assess student behavior, the fact that there is considerable student-teacher interaction allows the teacher to measure the student's attainment of goals in a more informal way. Daily evaluation of student progress enables the teacher to adjust activities to the needs of the students and prescribe appropriate remediation, if needed, before too much time has passed. Also, diagnosis may be used for individualizing instruction or for grouping purposes.

Skill 1. The teacher can specify possible functions which informal methods of evaluation could serve.

Skill 2. The teacher utilizes an appropriate informal evaluation method for a given situation.

Skill 3. Identifies possible student conceptual, process and skill errors and devises diagnostic activities to isolate the student's difficulty.

Skill 4. Constructs an activity to provide remediation for students who need additional work on a topic.

Skill 5. Identifies those students who are capable of more intensive exploration of a topic and provides an opportunity for them to do so.

III. Unstructured Inquiry

This approach refers to teaching in which the teacher withholds from the students the concepts and processes they are to learn but gives them the exemplars and problems from which they can induce or deduce these concepts or processes for themselves. Rather than directing the student's inquiry as in the structured inquiry approach, the teacher facilitates exploration and open-ended experimentation. A primary thesis for this approach is that practice in exploring and, thereby discovering for one's self, makes the acquired information easier to apply in problem solving situations (Bruner, 1961). Under this approach students choose their own inquiry strategies and methods of exploration. The emphasis is almost totally on intrinsic motivation stemming from independent inquiry into certain mathematical processes.

As with the other approaches, certain areas seem to lend themselves to use of an unstructured inquiry approach.

1. Situations in which open-ended exploration is desired with no predetermined objectives; student allowed to use experience and intuition (e.g., paper-folding in first grade, free play with manipulative devices such as geoboards, cuisenaire rods, multi-base blocks).

2. Topics which lend themselves to interesting activities involving mathematical processes which are basic to more sophisticated mathematical activity (e.g., number patterns, informal geometry, writing computer programs).

3. Introduction to a new concept or process in which closure is not necessary, rather the emphasis is on allowing the student to become familiar with the concept or process through independent inquiry.

4. Gain experience with mathematical processes used in problem solving such as trial and error, heuristics, pattern finding, and so on.

Example: Active involvement in mathematical activities is essential to the development of mathematical thinking processes in the student. Indeed, many mathematicians argue that the best way to learn mathematics is by doing mathematics. Assuming that this is the case, it is important that the teacher design mathematical activities which encourage independent exploration, and suggest certain mathematical concepts or processes without having specific objectives. An interesting activity for intermediate grade students is to make tessellations[3] using non-rectangular shapes. A student will be successful if he or she uses regular hexagons and forms a honeycomb pattern. On the other hand, the student would be unsuccessful if pentagons were used. In general, the student will only succeed if the sum of the measures of the angles of the shapes (this discussion is limited to polygonal regions) which meet at any vertex of the tessellation is 360°.

In this activity the teacher simply presents the problem to the students and leaves the finding of solutions entirely to their ingenuity. The teacher's role becomes one of providing hints if desired and encouragement if needed. The mathematics which can be learned by investigating such problems as tessellations of the plane is rich and allows the student to gain valuable experience in using the kinds of mathematical processes which are essential to mathematical discovery.

Specific Skills Within the Unstructured Inquiry Approach

Function 1. Planning

Providing instruction using this approach requires very careful planning to facilitate exploration and open-ended inquiry into a generally broadly defined area of mathematical activity. That is, the emphasis is on student

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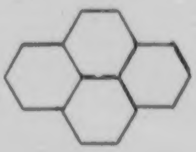
[3] A tessellation is a pattern of shapes which covers the plane completely. For example, the plane can easily be covered with rectangles or regular hexagons as shown here.



involvement in doing mathematics and not on attaining predetermined performance objectives. This does not mean that this approach can be used only to give students experiences in using mathematical processes. In fact, very well-defined skills and abilities may result; but the primary focus is on direct student involvement with certain strategies, methods of exploration, and processes of mathematical thinking. Hence, for this function the skills the teacher must possess center around identifying those areas of mathematics which lend themselves to investigation by means of certain mathematical processes.

Skill 1. Identifies mathematical topics which are accessible to exploration at a given grade level and for given student characteristics.

Skill 2. Identifies mathematical problem solving strategies and heuristics which may aid student in learning.

Skill 3. Selects and designs games and other activity-centered techniques which facilitate student inquiry.

Skill 4. Determines possible mathematical concepts and skills needed and processes used in proposed student activities.

Functions 2, 3 and 4. Explaining, Questioning, and Reinforcing and Motivating

As with structured inquiry explaining skills are not as important in an unstructured mode as they are in exposition. Also, with this approach the teacher is more a facilitator than a guider and thus the teacher's role as a motivator is diminished. Implementing mathematical activities which enhance independent student inquiry and stimulating student interest in exploration are key features of this approach within these functions.

Skill 1. Implements instructional activities suitable for small group or individual inquiry.

Skill 2. Designs exploratory activities best suited to the abilities and interests of individual students.

Skill 3. Facilitates independent student inquiry by providing feedback and appropriate reinforcement to students on their progress in investigating a mathematical topic.

Skill 4. Inculcates enthusiasm in students for active exploration and divergent thinking.

Function 5. Diagnosing and Evaluation

Assessment aspects of this approach are basically concerned with measurement of higher cognitive processes (such as analysis, synthesis and evaluation) and affective dimensions of student behavior. Since the emphasis is on independent inquiry and exploration the teacher must also determine the extent to which the student has mastered the skills which are needed.

Skill 1. Designs and uses informal evaluation procedures (such as observation and individual counseling).

Skill 2. Identifies and remediates student process errors.

Skill 3. Develops, uses and interprets instruments for evaluating affective aspects of student behavior.

Skill 4. Evaluates the appropriateness of activities designed for individual inquiry and exploration.

Concluding Comments

A variety of teaching competencies have been determined by focusing on the teacher as a decision maker. The truly skillful teacher was identified as being a person having the ability to use acquired knowledge and external cues to determine an appropriate courese of action toward implementing mathematics instruction. A diagram (Figure 1) was given to illustrate the decision-making process of integrating the various components of the instructional process.

However, this diagram does not indicate how this decision-making process operates.

In the initial stage, decision-making involves determining answers to several questions regarding objectives, student characteristics, and subject matter. Among the questions which must be answered are the following:

1. What are the main objectives of the lesson(s)/activities?
2. What key concepts, generalizations, skills, and processes are involved?
3. Is (are) the lesson(s) designed to introduce, extend, maintain, or is mastery expected?
4. What ideas and skills previously studied do the students bring to the lesson(s)?
5. Should any developmental work be provided? What type?
6. What sources of difficulty exist for the students? Can these difficulty areas be dealt with effectively?
7. How does the lesson(s) fit into the overall mathematics program?
8. Where and how is this topic treated again in the mathematics program?
9. How are the mathematical ideas contained in these lessons related to other subject matter areas?
10. What can be done to modify, enrich, or extend the lesson(s)/activities?

The teacher who can answer each of these questions is ready to choose a teaching approach and implement the other tasks which are included within the action component of the instructional process. Thus, the skillful teacher is more than a person who is skilled in doing a variety of tasks, but is also a person who can pull together each of the components in the instructional process to enable the student to develop his abilities to their maximum potential.

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CONCEPTS ASSOCIATED WITH APPROACHES TO TEACHING MATHEMATICS

Expository

- Demonstrating
- Explaining
- Information transmission
- Lecturing
- Product oriented
- Reviewing
- Summarizing
- Teacher-directed
- Time/cost considerations

Structured Inquiry

- Active participation
- Convergent inquiry
- Divergent inquiry
- Process orientation
- Student inquiry
- Student-student interaction
- Teacher-guided
- Teacher-student interaction

Unstructured Inquiry

- Active participation
- Discovery
- Divergent inquiry
- Intrinsic motivation
- Open-ended exploration
- Process orientation
- Student inquiry
- Student-student interaction
- Student-teacher interaction

Summary of Skills by Approaches to Teaching Mathematics

Expository

Identifies the key ideas and central thrust of each lesson.

Distinguishes among exploratory, developmental and mastery lessons.

Provides a rationale for the organization of a presentation.

Writes terminal, unit and daily objectives.

Designs appropriate instructional sequences: consistent with goals and reflecting a transitional from concrete to abstract.

Plans lessons reflecting current research and theory.

Sequences mathematical topics in a manner consistent with the structure of the mathematical system and the students' level of development.

Distinguishes among and designs introductory, extension, maintenance and reinforcement, and mastery lessons.

Illustrates a hierarchial learning model for a major topic.

Designs and implements effective explanations of mathematical concepts, processes and skills through direct presentation to the students.

Uses appropriate questioning techniques.

Adjusts presentations or explanations of mathematical topics in accord with student characteristics and the level of abstraction, generalization, and sophistication of mathematical topic.

Motivates students to learn mathematics.

Designs appropriate methods of assessing student progress, skill and understanding.

Administers and evaluates instruments designed to measure specific student cognitive behaviors.

Structured Inquiry

Translates objectives into words which are familiar to students.

Identifies those aspects of a planned mathematics activity which will be accessible to student exploration and those which will require considerable clarification or direct explanation by the teacher.

Designs and implements mathematical activities which promote student inquiry.

Designs and implements mathematical activities which are sequenced in a way which: is mathematically sound, will lead to desired student understanding or skill with a minimum of teacher prompting and redirecting, and best illustrates the features of certain mathematical thinking processes and relationships among concepts.

Designs and implements mathematical activities which are appropriate for: initially introducing a concept, process or skill, extending student skill in or understanding of a concept or process, reinforcing and maintaining a certain level of understanding or skill, and developing mastery of a skill or a deep understanding of a skill or process.

Identifies and anticipates student difficulty or misdirection during the conduct of an activity and takes appropriate action to provide assistance.

Redirects a student's inquiry by use of appropriate questioning techniques or can refocus the student's attention on essential ideas when the need arises.

Uses appropriate reinforcement techniques to encourage student investigation during an activity.

Specifies possible functions which informal methods of evaluation could serve.

Utilizes an appropriate informal evaluation method for a given situation.

Identifies possible student conceptual, process and skill errors and devises diagnostic activities to isolate the student's difficulty.

Constructs an activity to provide remediation for students who need additional work on a topic.

Identifies those students who are capable of more intensive exploration of a topic and provides an opportunity for them to do so.

Unstructured Inquiry

Identifies mathematical topics which are accessible to exploration at a given grade level and for given student characteristics.

Identifies mathematical problem solving strategies and heuristics which may aid student in learning.

Selects and designs games and other activity-centered techniques which facilitate student inquiry.

Determines possible mathematical concepts and skills needed and processes used in proposed student activities.

Implements instructional activities suitable for small group or individual inquiry.

Designs exploratory activities best suited to the abilities and interests of individual students.

Facilitates independent student inquiry by providing feedback and reinforcement to students on their progress in investigating a mathematical topic.

Inculcates enthusiasm in students for active exploration and divergent thinking.

Designs and uses informal evaluation procedures.

Identifies and remediates student process errors.

Develops, uses and interprets instruments for evaluating affective aspects of student behavior.

Evaluates the appropriateness of activities designed for individual inquiry and exploration.

CHAPTER 8

TEACHING SKILLS IN SECONDARY ENGLISH

Alan C. Purves and Bryant Fillion

Knowledge

A competent teacher, we might say, is first of all one who knows the subject to be taught. A teacher of English must have a knowledge of the English language, its structure and its history, a knowledge of rhetorical theory and practice, both oral and written, and a knowledge of literature and of criticism. These three areas form the tripod with which most English teachers are familiar. The limits of knowledge in each of these areas seem boundless; minimal knowledges for teaching must, therefore, be arbitrarily defined. Recent surveys like the English Teacher Preparation Guidelines and the Illinois State-Wide Curriculum project in English Teacher Preparation both set forth minimal levels of preparation in these subjects: knowledge of structural, traditional and transformational grammars; knowledge of Aristotelian and Platonic rhetorics; knowledge of the sweep of British and American literature; knowledge of "new" and thematic criticism. Certainly all of this knowledge is important, although specifics within these broad areas become difficult to determine. In literature, it is important for a prospective teacher to have a working knowledge of popular literature and adolescent literature, as well as the literature of ethnic and regional minorities and the "literature" on film and other media. In rhetoric, it would be useful for a student to be aware of the rhetorics of Ken Macrorie and of James Moffett, since both are used in the schools. In language, it is important for a student to have a knowledge of dialectology, sociolinguistics, and psycholinguistics, as well as a command of traditional grammar sufficient to cope with Warriner and with school boards, of transformational grammar sufficient to deal with the textbooks of Paul Roberts and Owen Thomas, and of structural grammar sufficient to undertake contrastive analysis of the students' dialects and whatever passes for "standard."

If we seem to be placing a premium on knowledge and prescribing a curriculum suitable for a Ph.D., it is for a reason. We have noticed that teachers, both prospective and working teachers, have to cope with all these matters, yet they haven't as much at their fingertips as they should have, and they often do not have a means of acquiring the knowledge that they need. They, therefore, avoid teaching their students language, composition, and an appropriate strategy of response. Many of the content courses do not give the teacher the concepts about the subject that are powerful or they present those concepts in such a way that details take on greater meaning than the concept itself. In language, the concept of deep and surface structure is probably one of the most powerful, but too few texts and classes allow the college student to worry that concept. Phrase structure rules become the important matters instead. Courses in literature seldom prepare the student to deal critically with a new work, and none go into the reasons for approaching literature in a particular way or into a conscious examination of critical strategies. We have noticed that current lists of competencies tend to list trivia or test items rather than the concepts those items measure. Thus, they perpetuate the inanity of most catalogues of behavioral objectives. English courses do allow students to act like English student-scholars, to perform critical and historical research, but they do not provide students with the metatheory that is going to help them determine why they do what they do. The metaconcepts of language, literature, and rhetoric are important for they can enable a student to move into new material, a new textbook, a mini-course framework, or an open or closed teaching situation with a certain degree of confidence. We should stress here that to say a teacher should have all of this knowledge is not to say the teacher will impart that knowledge to students. A teacher must know more than will be spewed forth in a class or a unit; thus, and only thus, can a teacher understand that which students do and why they do it. Further, increased knowledge of the subject enables a teacher to see the various ways people "know and do" English, and to see beyond the limitations of particular textbooks and curricula.

A second set of concepts that a teacher should have at command are those dealing with learning and development, particularly as learning and development are related to the mother tongue. Concepts of learning come, of course, from the theories of Piaget, Ericson, and others, but those general concepts must be seen in the context of language learning not as vague theory. It is for that reason that one might well set forth a series of competencies based on the ability of prospective teachers to observe students in the process of behaving and to determine what operations they are performing with respect to the mother tongue. In language, one should be able to look at the developmental indices set forth by Carol Chomsky, Kenneth Goodman, and others, as they are illustrated in the talk or writing of children. In rhetoric, one needs to be able to make a rhetorical analysis of a student essay, not simply to grade it. In literature, one should be able to describe the critical stance taken by a student in a classroom discussion. A prospective teacher, then, should have the ability to observe the linguistic behavior of people at various levels and should be able to analyze the behavior. It is this observing and analytic ability that enables a teacher to make effective judgments about students' strengths and weaknesses, about how what a student is currently doing may be related to what that student could do. Instead of expecting a ninth grader to write a critical analysis of "After Apple-Picking" like the critical analysis the teacher wrote in college, the teacher might see how the ninth-grader acts when acting like a ninth-grader.

Learning theory as it is embodied in behavior with respect to the mother-tongue is but a subset of general learning theory, one of the foundation knowledges that a prospective teacher should have. But as we have suggested, in subject matter the prospective teacher has no sense of the forest. All of college instruction deals with trees and how to deal with trees. In the educational foundation courses, most prospective teachers get an overview, but do not see how the overview relates to students with whom one is dealing in English courses. We suggest the teacher learn to perform the operations of the learning researcher and the educational psychologist or education anthropologist. Competence in observing, recording, analyzing and interpreting behavior in the various facets of English would enable the teacher to function better as a diagnostician in the school and in the classroom.

The Spectrum of English Teaching

Although one can think of radically different approaches in the teaching of other subjects, the teaching of English at the secondary level is not so easy to categorize, primarily because of the complex nature of the subject. Mother-tongue instruction includes the reading and criticism of literature, composition in visual and aural media, debate, poetry, writing, dramatics, mime, dictionary work, semantics, grammar, spelling, library research, and a gallimaufry of other activities. At times training in these activities demands a quasi-behavioristic approach; at others a proto-Rogerian approach. These differences do not account for the major differences between English teachers, nor do differences along didactic or heuristic lines.

To us, the major distinctions in the teaching of English seem to devolve from the conception the teacher has of the relationship of the student to the language and to the activities one performs with respect to that language. Three approaches seem to typify schools of English teaching: the *imitative*, the *analytic*, and the *generative*. No one teacher in all the manifold activities of secondary school English adheres firmly to one approach all the time, but teachers do tend to have certain tendencies, certain shibboleths. Teachers who are close to the imitative approach talk about the students as needing to know; those of the analytic approach talk about the students as needing to be able to do; and those of the generative approach, as needing to grow and develop. The three approaches cross over; all incorporate cognitive and affective goals; all seek to justify their approaches with a vision of society and the function of language in that society.

The Imitative Approach

The imitative teacher tends to view language as containing a conservative element; an extreme imitative teacher sees it as static and decries neologisms and shifts in usage. The imitative contains a sense that there is a form of language that one might call standard, a model of speaking and writing that one might call classical, a standardized canon of literary works. The approach operates from a sense that there is, as Matthew Arnold said, "something excellent rather than inferior, sound rather than unsound, true rather than untrue." The teacher of linguistic etiquette is of this type, so too are the teachers of black studies or women's studies, who want to acculturate their students to "change their consciousnesses." There is a moral sense allied with the imitative approach, a sense that might lead to thematic study or ethics or some other humanistic study related to the mother tongue.

For the teacher from the imitative approach there is always a sense of standard: in writing a usage, a syntax, a rhetoric that is to be preferred and to be defended on the grounds of authority. Authority reigns behind literary study or the study of popular media, as well. The authority is frequently the authority of the past, although there may well be various forms of revisionism as can be seen in ethnic and women's studies.

The style of the imitative teacher is generally expository, a term which might be used to relate this approach to the teaching of other disciplines. The style, didactic and subject-centered, views English as a body of information and experiences that the student is expected to know. The ideal expository teacher is a "gifted orator," a performer who is able to make English clear, interesting, meaningful, and memorable to students. The dark side of the performer is the "lecturer," the person who drones away in presenting material that could be conveyed better in some other manner. Whether skillful or unskillful, the imitative teacher is concerned with such questions as "what will my students need to know and understand in today's world?" and "how can this subject matter best be conveyed to them?"

The Analytic Approach

The analytic approach is concerned with the skills employed by a scholar or practitioner in the various aspects of English. In language, these might be the skills of the lexicographer, the grammarian, the dialectologist. In composition, they might be the skills of the rhetorician, the orator, or the self-conscious writer of fiction or poetry. In literature, they might be the skills of the critic, be he formal, thematic, or historic. More often than not the emphasis of the approach is on the cognitive development of the student as a dispassionate observer and analyst of linguistic performance, his own or that of others.

The writer who can edit, the listener who can apply the skills of the semanticist, the reader who can analyze his own responses all are ideals set by the analytic approach.

In teaching strategy, the analytic approach will generally follow the principles of structured inquiry since this is best suited to the training of skills and heuristic techniques. "To know" English is to be able to perform certain operations: reading, writing, speaking, listening. As James Moffett[1] says, a student "learns how to operate [English]." The main point is to think and talk about other things by means of this system. In teaching students skills, one provides them with structures, problems, devices, and procedures, and enables them to practice using those procedures. An "ideal" may be the composition teacher whose students become adept at writing, or the transactional critic whose students learn to question the literature and their own responses sensibly and seriously, or the semanticist who provides tools to students to look at their own language and that of others dispassionately. The teacher who uses the principles of mastery learning would be a latter-day ideal of the analytic approach. At worst, the teacher may be criticized as not teaching anything at all or as becoming over-structured and trivial, of omitting the forest for the trees by being so concerned with sub-skills that the main skills are lost. In teaching writing, for instance, a teacher may have students write correct but vapid prose.

The Generative Approach

The generative approach to English teaching predicates instruction on the idea that language is a human activity at once social and expressive. People use language to order phenomena into meaningful patterns and to present those patterns to other people to form some sort of community. Teachers of the generative school do not deny the validity and importance of cognitive development or skills but they are more apt to see linguistic development as a natural process to be fostered rather than something to be taught about or conveyed by a teacher. They see language behavior as intensely personal, permitting and influencing other growth and development, rather than as a finite set of behaviors to be imposed as ends in themselves.

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[1] Teaching the Universe of Discourse, Boston (Houghton-Mifflin, 1968) p.6

In school, the generative approach to the mother tongue has as its main goal fluency - fluency of talk, of writing, of reading. There may be little emphasis on "correctness" in a textbook sense and little emphasis on some form of metalanguage (grammar, say, or criticism) by which to treat the utterances of students or of the speakers and writers to which they attend. A generative teacher may be less concerned with having students speak or write according to a standard, than with having them become habitual users of language in its various modes and for various purposes. Language acts can become therapeutic; at the very least they help students order their perceptions and their feelings. In literature a generative teacher will encourage free reading, much reading, and will be less concerned with criticism than with the very act of "hooking" students on books.

The basic teaching procedure of the generative approach is unstructured inquiry, the focussing on experiences that will generate language activities, but which do not have a particular predetermined end. The inquiry is valuable in itself, leading to the student's own goals rather than to teacher-determined objectives. The ideal teacher is the "stimulating" one who successfully challenges students to go charging off in self-chosen profitable directions. He or she may be a Rogerian facilitator, helpful and encouraging, a resource, or "idea" person. At worst, such teachers may create little more than chaos and leave students without leadership or order.

Each teacher is to some extent idiosyncratic and there are probably few representatives of a "pure" approach. Most English teachers are quite eclectic in the classroom and over a period of time will be observed demonstrating skills and behaviors characteristic of all three approaches. Unfortunately, however, the approaches are different enough to create conflict and frustration for the teacher. Whereas his talents and orientation may lead him toward a generative approach, he will be aware of and perhaps somewhat intimidated by teachers who are particularly skilled in the expository or analytic approach. While he may take satisfaction that his own students are actively involved and enjoying the subject in ways he considers worthwhile, he may nevertheless feel some guilt that they could not compete with an expository teacher's students in demonstrating systematic knowledge of the subject in more traditional terms. Similarly, the teacher skilled in expository techniques may have doubts whether the knowledge and skills his students can demonstrate are as valuable as the inquiry skills developed by students of an analytic teacher.

Teaching Functions

Regardless of the teacher's general approach and orientation, certain tasks are inherent in teaching English in today's secondary schools. Different teachers will perform the tasks in different ways, partly because of their orientation, and to this extent different skills may be required, but all teachers are concerned with creating a viable classroom climate, getting students involved in learning experiences and sustaining their involvement, and evaluating the outcome of teaching, both intended and incidental. More specifically, the functions of the classroom teacher may be identified as follows:

Evaluating the existing learning environment

Diagnosing student needs, interests, abilities, and expectations

Specifying instructional goals and objectives

Planning for instruction

Conducting instruction in the classroom

Conducting formative and summative evaluations

Evaluating the existing learning environment amounts to sizing up the situation, either formally or informally. In sum, what the teacher must do is determine the environment's potential to foster or detract from learning and growth, and find out about the variables over which he has some control and the constraints which will influence his teaching. It is quite possible that he will find that his personal orientation and preferred approach to teaching will have to be modified in order to survive in this particular situation, as with the generative teacher who finds himself in a very traditional, academically-oriented English Department which grades students (and teachers) on the basis of departmental exams.

"Learning environment" may be defined narrowly as the immediate classroom surroundings of the student, or broadly as the socio-cultural environment and the times in which one lives. Though the larger environment impinges upon the classroom in various ways, and teachers are assumed generally to be aware of it, the major emphasis for skill development is on those aspects of the environment which are under a teacher's direct control and within his sphere of influence: classrooms, points of student-teacher interaction, the department and school, and, to some extent, the immediate community.

As with many teaching skills, the skills associated with this function are a spinning out of the individual's general sensitivity to and perceptions of the world around him. He needs to know what to look for and what to look out for.

As an English teacher, he must be concerned with those things in the school and community which influence language learning and his classroom as a language environment. Such things as the socio-cultural-linguistic background of his students will have obvious effects, as will the school and community expectations for students. In some communities, for instance, there is much more emphasis on basic skills, such as mastery of the conventions of the standard written dialect, than on familiarity with cultural content, and this will influence what the teacher is expected to do in his classes. The general school environment will affect his teaching by the relative stress it places on such things as athletics and other socializing activities as opposed to academic achievement and work-study skills. The material, human, and institutional resources of the school and community will also affect teaching in very direct and obvious ways.

Diagnosing student needs, interests, abilities, and expectations is an extension of the former function, involving sensitivity to people as well as to situations. Even though the pressures of large classes and a predetermined curriculum may limit the extent to which the teacher can use this information, teaching does depend in some part on the teacher's ability to learn about his students, individually and collectively.

Perhaps more than with other functions, a high degree of competence in this area is probably more the result of a teacher's personal qualities than any particular skills or knowledge. It involves such qualities as "sensitivity to others," and what Carl Rogers[2] calls empathic understanding: "a sensitive awareness of the way the process of education and learning seems to the student." An insensitive person who seldom attends to the feedback he receives from others, or who never wonders about what the other guy is thinking and feeling will

[2] Freedom to Learn, p.111

probably never possess this competence in the highest degree.

Most of the subsequent functions on this list depend to some extent on the teacher's fulfilling this function adequately. Selecting content which students need to know, skills they need to develop, activities which will be appropriate all depend on a correct "reading" of the students' interests, abilities, aptitudes, and perceptions. The teacher who consistently chooses worthwhile materials and activities which "turn students on" is fulfilling the diagnostic function well, however informally or unconsciously he performs it.

Assessment of where students are must also include their expectations of the teacher and school, for these will influence the strategies of the teacher in dealing with them. For instance, students who have adapted well to structured, teacher-directed lessons will need time and effort in order to move into a less structured teaching approach. The teacher may have to move slowly, deliberately in getting them to accept responsibility for their own learning.

Specification of instructional goals and objectives is a verbalizing function which may take place before, during or after instruction. In all teaching activities, the teacher is guided by a set of purposes which may be stated openly or merely implied in the choices he makes, and the extent to which these purposes are actually verbalized and examined varies considerably among teachers and situations. Even though this function logically precedes other functions, such as selection of materials and learning activities, and in principle does precede them (perhaps only as a set of intuitions which guides the teacher in his choices), the actual statement of objectives may come after a lesson has been taught, in the form of an explanation of why he did certain things rather than others.

In stable societies and times, teachers may seldom feel called upon to consider or to justify their teaching objectives, since the reasons for teaching what and how they do are generally assumed and accepted. But we doubt that any teacher today can avoid a fairly constant assessment of their goals and objectives, and perhaps their values and general approach as well. In a rapidly changing society, few teachers could do a consistently good job throughout a long teaching career without the habits of questioning and reconsidering what they are doing and why. Furthermore, teachers are increasingly called upon to justify verbally their objectives in terms of the society, student and school.

To the extent that the teachers consciously consider the goals, purposes, and objectives which guide teaching, they will be involved in translating these into guidelines for action, which evolves into the planning function.

Planning for instruction is a function all teachers perform, either formally or informally, on paper or in their heads. It is distinguishable from the foregoing functions primarily in its specificity, and its proximity to the classroom. Planning is seldom done in the abstract, but with particular materials, students, and situations in mind. In planning, teachers commit themselves, at least tentatively, to particular courses of action with regard to students, subject matter, and classroom. At this stage, the curriculum is translated into things the student will be required, requested, or encouraged to do or attend to, and the teacher's general approach is transformed into particular expectations for the class.

For all teachers, performance of this function involves selecting or preparing materials and content, considering and selecting from among possible learning activities, and arranging the physical aspects of the classroom to promote desired outcomes. Because teachers assume responsibility for their class, they cannot avoid a concern for what goes on there, but the degree to which they pre-specify classroom activities is one indication of their approach to teaching. The imitative teacher is probably the most prescriptive planner, making decisions about which specific selections, ideas, and skills to deal with, how to introduce and consider them, and in what order. For the analytic teacher, who may be somewhat less prescriptive, planning requires a selection of processes students should go through, the materials and assignments which will foster these processes, and the ways to get students to participate. The generative teacher is generally the least prescriptive about what students will actually learn, but is concerned with finding ways to engage them in language activities. In fact, for the generative teacher, planning may not be "for instruction" in the usual sense so much as "for finding ways to bring students and the subject together."

Adequate planning involves considerable knowledge of alternatives (the materials and procedures which *might* be tried) as well as adequate performance of the foregoing functions. Their knowledge of the existing learning environment, diagnosis of students, and specification of goals and objectives will provide the basis for decisions among the range of variables available.

Conducting instruction in the classroom is the *sine qua non* of teaching, incorporating the manifold acts the teacher performs while in contact with the students as a class. It involves the general teaching tasks of managing the classroom, establishing helpful relationships with students, and promoting achievement motivation, as well as the more subject-specific tasks associated with establishing a relationship between students, the subject, and the real world. Though these tasks and the attendant skills may be treated separately for purposes of analysis and explanation, in fact they are seldom separable in the classroom. Just as student attitudes and achievements in a subject are often closely related, so are attitudes toward and behaviors in the classroom. Skill in making the subject matter seem interesting and important to students and skill in preparing students to attend to the subject matter may be treated separately, but they are probably mutually dependent.

Perhaps more than in the other functions, the skills valued and consciously developed by the three schools of teachers are different here, and, paradoxically, teachers in fulfilling this function are most apt to be eclectic, drawing on behaviors and processes associated with all three approaches. Given the variability and unpredictability of most classrooms, the list of skills associated with the function could be virtually interminable, ranging from such finite items as "smiles frequently" to such global items as "supports and rewards student achievement." Most such lists, however, involve a spinning out, in greater or lesser detail, of expressions of a relatively small number of tasks: performing stimulant operations such as questioning and probing, manipulating the various kinds of materials and information associated with secondary school English, performing reinforcement operations and negotiating interpersonal relations with students, communicating and empathizing with students, performing in small and large groups, and using technological equipment.[3]

Adequacy in performing this function may be defined in at least two very different ways. Teachers may accomplish this function by producing the outcomes desired; that is, the students do and learn what they want them to. More usually, and perhaps more realistically, teachers are said to have performed this function when they behave in the classroom "the way good teachers behave." Whichever test of adequacy is applied, performance of this function may be taken as evidence that the teacher has in fact mastered the skills associated with all of the previous functions.

Conducting formative and summative evaluation involves the teacher in determining the outcomes of teaching in terms of student achievements and attitudes,

[3] Adapted from a list of minimum abilities cited by B. O. Smith in Teachers for the Real World, p. 71.

and in evaluation of the teaching itself. Formative evaluation overlaps the earlier functions of evaluating the learning environment and diagnosing students, attempting to evaluate students' progress toward larger, terminal objectives. Summative evaluation determines the general effectiveness of one's teaching and whether the students have achieved the terminal objectives specified by the teacher. In all evaluation, which is a constant process involving sensitivity to events and feedback, the teacher must be aware not only of anticipated, desired outcomes, but of unintended outcomes as well. For instance, the teacher should be able to determine when definite negative attitudes toward the subject are accruing at the same time that the intended learning is occurring. In such cases, it may be desirable to sacrifice achievement of the predetermined objectives to the end of improving attitudes, and the teacher needs the flexibility and skills to adapt teaching to the results of such findings.

Depending on the teaching approach, school constraints and expectations, and teacher background, the teacher may fulfill these functions formally or informally, publicly or privately, rigorously or casually. In most cases, teachers are called upon to give periodic reports on student progress and achievement (usually in the form of grades), and to substantiate these evaluations with some form of evidence collected more-or-less systematically. However, the nature of the evidence sought, the method of collecting it, and the emphasis given to different measures vary considerably among teaching approaches and from teacher to teacher within approaches.

Skills and Strategies

Even though it is necessary for purposes of ordering and explaining a potentially limitless multitude of skills involved in teaching to treat separately the various functions we have identified, this separation belies the complex interrelationships of the functions as they usually are performed by classroom teachers. Despite what we take to be the logical ordering of the functions, for instance, we know that evaluation of the environment and diagnosis of students is constantly going on, and that selection of goals is often influenced by other factors involved in planning and by what proves to be possible in actual conduct of classes. As various functions at times collapse into each other in teaching, so skills associated with one function become necessary skills for others as well.

One difficulty in making a list of skills is our present inability to say with certainty which are essential and which are peripheral. Since there is little evidence linking particular teacher behaviors to student learning outcomes, it is difficult to establish priorities for those skills teachers must have in order to help students learn. Nevertheless, there are indices of success in the various approaches to teaching, the degree to which the teacher approximates the "ideal" of a particular orientation. Perhaps the most that can be asked of a teacher, under these circumstances, is to be able to do what teachers do rather than to produce specified results.

The isolation of skills into discrete units creates another problem. The mere fact that a teacher can make certain moves does not necessarily mean that he or she will make them appropriately. For example, a teacher who has the proven ability to define and explicate concepts so that students can understand and apply them may try to use this skill in a situation which requires another skill, such as structuring the class to obtain order and attention on the part of the students. Not only must teachers be able to do certain things, they also must know when to do them.

Teaching acts must fit into a pattern, a strategy of teaching. The questions must appear in a sequence and be related to activities, rewards and responses. The test should follow from the objectives, and the grades should follow from the tests and the objectives. The sequencing of learning activities into a meaningful pattern for a group of slow students may differ from the sequencing for an able group. Both the sequencing itself and the distinctions between sequences according to groups of students constitute strategies that a teacher must acquire.

The "ideal English teacher" would be one who could cause learning and growth to happen to his students no matter what the circumstances. He would be equally adept with an individual and a large group, with the highly motivated and the hostile, with the children of suburbia and those of the ghetto, the apathetic and the excited, the quick and the slow. He would be a man for all seasons, and no doubt one of the most exciting people on the face of the earth, capable of almost infinite adaptability. Unfortunately, such people are relatively rare, and we will usually have to settle for less.

One problem which must be recognized in the following catalog of skills is that we do not yet know whether the various skills which we have described are generalizable across situations. Will the teacher who is capable of motivating middle class college preparatory seniors be equally adept at motivating lower class sophomores with non-academic aspirations? Are the same skills operating in the two situations? Until we have the answers to such questions, it will be desirable to indicate something about the situations in which skills are demonstrated as well as a candidate's level of performance.

FUNCTION: EVALUATES THE EXISTING LEARNING ENVIRONMENT

Approach: Imitative, Generative, or Analytic

SKILL DESCRIPTION: In all three approaches, there is a need for the teacher to ascertain what sort of environment will be the locus for any intended instruction. Upon that information being assimilated, the teacher might well modify his or her existing philosophy or approach. If a community is a rural conservative one, there is a strong probability that literature dealing with drugs, creative dramatics, or Freudian analysis of literature will meet with some resistance from the parents and administration. Similarly, a modelling slot-filling course in language will be less than appropriate in an "alternative school" in a suburban community. These are extreme examples, and a teacher must determine the "tolerance" of a community concerning the education of its youth. A community will tend also to censor works in literature courses: Eldridge Cleaver will be excluded from some communities, Joel Chandler Harris from others.

School constraints might be physical as well (chairs bolted to the floor, a new school theater); they might be financial (the amount of money available for materials and the resultant necessity to continue using a set of textbooks); or administrative (union rules prohibiting teachers from using certain equipment, hall monitoring, unlimited use of out of school space).

Such constraints are also possibilities. A school close to a college or university means access to faculty and guest speakers; another in a varied community means a chance for dialect study. A school in a settled area means there is a chance for a school project in community history and humanities.

A diagnosis of the school and the community can give a teacher a chance to bring together a taught or developed philosophy of English instruction and the community needs and desires.

Although we have indicated that the function would be similarly performed by teachers of all three approaches, there are some differences in focus. An imitative teacher might well look at existing materials more than might teachers of the other two types. The texts that are available would be important to the imitative teacher. To the analytic teacher mean reading scores might well be important as might other indices of over-all student ability. A generative teacher might well look more to community resources and to student attitudes and might perform the kind of inquiry described by Friedenberg in The Vanishing Adolescent.

A final note on this function: as we have indicated, this function is a continual one on the part of the teacher. To check the success of teaching in terms of the community and the school, the teacher must continually monitor them, must get the feel of their perceptions of his or her teaching. On the basis of this feedback instruction might well change.

0.1.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class and community: --devises a procedure for determining the values of the community as they determine student attitudes, behaviors, expectations --devises a checklist for determining the physical, financial, and administrative constraints of the school as they relate to English teaching --indicates what the results of different sorts of constraints might be for planning instruction (e.g. how community members might be involved in language study)	In microteaching: --same as at left In actual teaching: --devises a procedure for determining the values of the community --carries out that procedure and makes a summary statement about those values (e.g. stand of school on parental censorship) --devises a procedure for determining the physical, financial, and administrative constraints of the school (e.g. rules and "hidden curriculum")

--indicates areas of compromise among conflicting values sets	--carries out that procedure and makes a summary statement about those constraints (e.g. possibilities for film-making in English class) --describes the implications for English teaching in light of that statement (e.g. whether (and which) professional writers live in the school's neighborhood and will talk to students)

FUNCTION: DIAGNOSES STUDENT NEEDS, INTERESTS, ABILITIES

Approach: Imitative

SKILL DESCRIPTION: In the imitative approach, the teacher would want to ascertain the student's knowledge of or ability to imitate the models. In general, he would place students on a continuum. The diagnostic procedure might take the form of a pretest with respect to language generation; and a pretest or reading inventory with respect to reading and literature. Knowledge of vocabulary, spelling, usage, rhetorical tropes and figures, and literary works, would be inventoried less with an emphasis on the labels (such might be the function of diagnosis in the analytic mode) than with conformity to standards: correctness, propriety, familiarity with the touchstones of the culture. The teacher would probably make detailed inventories so as to allow for individual differences. Sweeping generalizations--none of them know who Richard Wright is; or none of them can write a paragraph without a sentence fragment--would not be appropriate.

1.2.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--indicates information about students necessary for instruction and potential sources of that information	--same as at left --administers selected or composed measures to class, making sure that all students know what is expected of them

--selects standardized tests or inventories from available supplies after ascertaining appropriateness to presumed level and objectives (e.g. uses Mental Measurements Yearbook to determine validity of a test)

--creates inventories and/or diagnostic measures that have content validity in terms of objectives (e.g. a reading inventory using a list of "best-loved books")

--scores and analyzes results to create a diagnostic profile of each student (e.g. distinguishes between attitudinal and skill problems of a poor reader)

--discusses results with students if there seems to be the need for so doing (e.g. if there appears to be some aberrant score)

--validates results against pupil records (e.g. reading reports against library records or spelling tests against past performance)

--demonstrates in comments and assignments an awareness of student abilities, learning problems, and interests

FUNCTION: DIAGNOSES STUDENT NEEDS, INTERESTS, ABILITIES

Approach: Analytic

SKILL DESCRIPTION: The teacher would seek to diagnose the analytic and perceptual skills of the student, particularly such skills as application, analysis, and interpretation. In reading, tests dealing with the higher levels of comprehension would be emphasized. In language, tests of knowledge of grammar and morphology and of grammatical rules and processes--diagramming, syllabifying, dictionary skills, and the like--might be paramount. In composition, there would be an examination of the students' ability to analyze other people's writing and to outline their own writing or to follow certain pre-established patterns: comparison and contrast, definition, and the like. The examination would ascertain ability at various stages of the composing process, from invention through revision. In literature, there would be tests in the application of critical terminology and critical procedures as well as in close reading. The test would most likely deal with the ability to handle an unfamiliar work of literature and the critical patterns of the student. The tests created or found to fulfill these functions should be capable of containing enough items on a certain skill so that the teacher can make sure the skill is pervasive in the student's repertoire.

2.2.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--indicates information about students necessary for instruction and potential sources of that information (e.g. indicates what performance of students would provide informal indicators of compositional problems)	--same as at left --administers test to students making sure that all students know what is expected of them (e.g. notices facial expressions of confused students and clarifies instructions)
--selects standardized test from available sources, and demonstrates applicability of the test to objectives and class (e.g. if a language arts series is used, checks diagnostic tests in series and chooses parts of test or subscores that will be used to frame objectives)	--scores and analyzes results to create a diagnostic profile of each student (e.g. a profile of ability to comprehend diction, metaphor and syntax) --discusses results with students if there seems a need for so doing (e.g. if there is an aberrant subscore)
--creates tests and/or diagnostic measures that have content validity in terms of objectives,are appropriate to age level or grade level of students, and call upon the cognitive behaviors demanded by the curriculum (e.g. an inventory of student's ability to make diagrams of *wh*-transformations or an inventory of embedding skills)	--checks results against scores and reports in student file (e.g. relates scores to past indices of skill mastery) --demonstrates in comments and assignments an awareness of student abilities, learning problems (particularly with respect to processes) and interest

FUNCTION: DIAGNOSES STUDENT NEEDS, INTERESTS, ABILITIES

Approach: Generative

SKILL DESCRIPTION: In the generative approach, the teacher would plan instruction based on a fairly secure knowledge of the student's interests, attitudes, and aptitudes. The teacher might well make up inventories of interests, Q-sorts and

Likert-scales, semantic differentials and other instruments to determine the feelings, thoughts, aspirations, and achievement motivation of the students. Many of these inventories would be informal, many might be based on interviews or questionnaires. A teacher might want to construct sociograms of the students. In terms of ability and aptitude, the teacher might use a less highly structured measure and then use fairly rigid forms of analysis--t-unit analysis, rhetorical analysis, or content analysis to determine where the students are. The reason for so measuring is that the teacher wants less to know how well the students measure up to a standard than to find out what pattern of strengths and weaknesses they exhibit and to determine probable success of different stimuli. A teacher in this and other approaches would also be able to "read" the signals of a class or a student: interest, receptivity, boredom, anxiety.

3.2.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--indicates information about students necessary for instruction and potential sources of that information	--same as at left
--selects inventories or tests from available supplies after ascertaining their appropriateness to objectives	--administers selected or composed inventory to class making sure that all students understand the nature of the task
--creates an inventory or diagnostic measure that has content validity in terms of objectives (e.g. makes up an interview schedule to determine skills for a learning exchange)	--scores and analyzes the results to create a profile for each student (e.g. a reading interest inventory based on topic and theme)
--provides rationale for inventories and tests that have been chosen or created	--discusses results with students if there seems a need to do so (i.e. to understand a specific aberrent score or to suggest activities germane to the student's expressed interests and abilities)

--checks results against observation of out-of-school behavior of students (e.g. reading interests as provided through candystore observation)

--demonstrates in comments and assignments an awareness of student abilities, learning problems, and interests

FUNCTION: SELECTS AND STATES INSTRUCTIONAL GOALS AND OBJECTIVES

Approach: Imitative

SKILL DESCRIPTION: From the imitative approach, the teacher selects objectives primarily from the writing of authorities and theoreticians, and relates them to the diagnosis of the students. The teacher is not slavish, but exercises autonomy in choosing the models and the degree of latitude from those models that might be exercised by the students. With respect to reading and viewing, the teacher must select goals that reflect a balance between cognitive and affective outcomes, between an appreciative approach or an historical approach. With respect to writing and other forms of language production, the teacher would select models and aspects of those models (lexical, syntactic, and rhetorical) to stress in instruction. The objectives will be stated in terms of content or what the student must do to learn.

1.3.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a definition of the grade or achievement level of students:	Given an assignment to actual class and given information about that class:
--selects objectives reflective of assumed capabilities of those students	--selects objectives reflective of capabilities of that class (e.g. modifies objectives in light of ascertained reading habits and present writing skills)
--selects objectives reflective of authorities in the field or cultural traditions of community (e.g. in Black literature selects	--selects objectives reflective of authorities in the field and culture

objectives that relate literature to socialization)	of the community (e.g. bases objectives in language on community desires concerning dialect)
--selects models appropriate to the objectives and attainable by students (e.g. selects exempla of novels by Black authors that scholars agree Black students should read)	--selects models and standards appropriate to those objectives and attainable by students

FUNCTION: SELECTS AND STATES INSTRUCTIONAL GOALS AND OBJECTIVES

Approach: Analytic

SKILL DESCRIPTION: In the analytic approach, the teacher selects objectives again from the writings of experts, particularly theoreticians and taxonomists, and relates them to the assessed skills and assumed growth capabilities of the students. The objects will emphasize not models but analytic concepts: deep structure, passive transformation, metaphor, psychological theme, exposition, comparison and contrast, enthymeme, sonnet, and the like. The student behaviors will be mostly cognitive, particularly comprehension, interpretation, application, analysis, although some affective behaviors will be mentioned. The objectives will generally be behavioral, focussing on what must the student learn to do.

2.3.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a definition of the grade or achievement level of the students:	Given an assignment to actual class and information about the abilities and achievements of those students:
--selects objectives reflective of the capabilities of those students	--selects objectives reflective of the capabilities of the students (e.g. bases objectives in literature on student's present and desired ability to perceive symbolic meaning in test poems)
--selects concepts drawn from selected taxonomies with reference to linguistics criticism or rhetoric	--selects concepts to be learned and applied

--provides a rationale for the objectives and concepts selected (e.g. shows the place of the objectives and concepts in a general program of skill development)

FUNCTION: SELECTS AND STATES INSTRUCTIONAL GOALS AND OBJECTIVES

Approach: Generative

SKILL DESCRIPTION: In the generative approach, the teacher selects objectives primarily in terms of student behaviors, or (more usually) activities which the teacher desires the student to perform. The teacher will again refer to authorities and to the student diagnosis. The objective or activity might be less clearly defined than with other curricular types--in part because the teacher is unwilling to predict what form of activity or behavior might emerge. In a composition, the teacher might not predict the form of the composition; in literature the teacher might not predict the nature or form of the response--or even the aspect of the work which the students will single out. In language learning, the teacher might simply specify stimuli and experiences but not the precise form of language that will emerge. In fact, the objectives may tend to be activity or experience descriptions of what the student will want to do.

3.3.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a definition of the grade of or achievement level and interests of the students:	Given an assignment to actual class and information about the abilities and achievements of those students:
--selects objectives reflective of the capabilities and presumed interests of those students	--selects objectives reflective of the capabilities and expressed interests of the students (e.g. for non-readers, selects attitudinal objectives related to the act of reading)
--selects expressive objectives	
--selects types of experiences which the teacher would like students to undergo	--selects types of experiences which the teacher would like students to undergo (e.g. for non-writers, proposes non-threatening introductions

--provides a rationale for those objectives which takes into account the nature of the students aptitudes and interests and the generative philosophy	to writing activities) --provides a rationale for the objectives and experiences

FUNCTION: JUSTIFIES GOALS AND OBJECTIVES

Approach: Imitative

SKILL DESCRIPTION: In the imitative mode, a teacher would justify objectives according to a set of assumptions concerning the nature of the subject matter. Such a justification would come from a sense of what educated citizenry "ought to know." The assumptions might deal with history, with cultural givens, with norms of linguistic behavior, with attitudes. The justification might refer to an ideal policy.

To be sure, many teachers will be eclectic, and will bring together amalgams of objectives and justifications from the three approaches which we have used. Anyone judging a justification, therefore, might look for both consistency with an ideal and internal consistency. Further, the justification must be in terms of the students and the school and the community in which the teacher will operate.

1.4.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of objectives which the teacher has selected or created: --justifies the selection of objectives in terms of a set of principles about the nature of society and culture (e.g. relates objectives to community consensus about how non-standard-English-speaking students should talk and write)	--same as at left

FUNCTION: JUSTIFIES GOALS AND OBJECTIVES

Approach: Analytic

SKILL DESCRIPTION: In the analytic mode, a teacher would justify objectives according to a set of principles about cognitive growth and about the nature of the subject matter. The justification might well be stated in terms of "ought to be able to." The principles might be from criticism, linguistics, rhetoric, or some similar discipline. They might also derive from a projection of future "survival skills" in a technocracy.

2.4.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of objectives which the teacher has selected or created: --justifies the selection according to a rationale illustrating the benefit of the desired behaviors to the students as functioning members of society (e.g. determines and defends a set of functional skills in writing for white-collar workers)	--same as at left

FUNCTION: JUSTIFIES GOALS AND OBJECTIVES

Approach: Generative

SKILL DESCRIPTION: In the generative mode, the teacher would justify objectives according to a set of assumptions about the growth of the child in language, about affective development, and about the uses of language as a social instrument. In many cases the justification will be in general terms of aiding the natural growth and development of the student. The justification might well be couched in terms of what people "should be doing." The principles might be from sociolinguistics, communication theory, psychological criticism or research in literary response, and from "humanistic psychology." They might also be related to a sense of an ideal social fabric based on mutual respect and love.

3.4.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of objectives which the teacher has created or selected: --presents in a narrative form an explanation of the experiential usefulness of the activities and experiences the students will undergo, which explanation will speak predominantly to the psychological well-being of the students at the moment and as adults in a future society	--same as at left

FUNCTION: TRANSLATES GOALS INTO GUIDELINES FOR ACTION

Approach: Imitative, Analytic, Generative

SKILL DESCRIPTION: Regardless of approach, a teacher needs to be able to move from goal to action. This ability is based on knowledge of available materials (texts, films, workbooks, games). More, it involves the ability to relate these materials to instructional objectives. The teacher must have bibliographic skills, but must also be able to analyze those materials in terms of objectives. The teacher must move from what to a conception of how--this is the first stage of planning for instruction.

0.5.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of objectives: --specifies types of activities or materials they imply (e.g.	--same as at left

a set of objectives dealing with involvement with literature might predicate a sequence of activities different from that following from objectives dealing with analysis of literature)

Given observation of a class:

--describes the implied goals of instruction (e.g. looking at a video-tape of directed discussion of an essay can list goals related to skill development)

FUNCTION: SELECTS MATERIALS, ENVIRONMENTS AND SITUATIONS

Approach: Imitative

SKILL DESCRIPTION: In the imitative curriculum, the major problem facing the teacher is which models to select. The criteria for selection are classicality (however defined) and availability to student. It is useless to assign Milton's Areopagitica to ninth-graders despite the fact that it is a model classical oration. A second problem facing the teacher is the problem of motivation to attend to the models and to the problems raised by the models. Usage drill is not exciting simply because drill is not exciting. "Eat it, it's good for you" is not the most effective motivating device. Modelling in writing can take on a gaming air as in making up a Mad magazine series of parodies of good writing styles. The selection of tasks is particularly important if one considers what happens in a class when the first germane task is completed in ten minutes and there are thirty minutes left in the period. Prospective teachers tend to prepare too few materials or tasks. An oversupply can always be banked.

1.6.1 indicators

college classroom or learning lab

Given a hypothetical class:

--selects materials, environments, situations that will serve as adequate models for the students' language behavior (e.g. selects writing assignments that will encourage students to suit various styles to a topic that interests them)

--selects materials, environments, situations that are appropriate to the interests, assumed knowledge and backgrounds of the students (e.g. chooses aspects of a novel that will serve to engage students' interest in reading the novel)

--selects materials, environments, situations that will adequately cover the objectives and are sufficient to occupy the time of students

--develops appropriate bridging activities or advance organizers (e.g. prepares an introduction of a literary selection and relates to works already read)

--provides a rationale for the selection that has been made

microteaching or actual classroom

--same as at left except that the second indicator would be modified:

--selects materials, environments and situations that are appropriate to the knowledge, interests, and backgrounds of the students as determined through the diagnostic procedures earlier used and which conform to the constraints imposed by school architecture and organization and by the community

FUNCTION: SELECTS MATERIALS, ENVIRONMENTS AND SITUATIONS

Approach: Analytic

SKILL DESCRIPTION: In the analytic approach, the criteria for material selection are applicability to the skill or problem, and availability. If the students task is to deal with matters of inferring varieties of authorial tone, the selection must be from a range of tones. In language, there must be a range of concrete instances of relative clauses or type 3 sentences. The latter situation brings up the problem of availability in a different way; if students are to be asked to analyze sentences the content of the sentences should bear some relation to the student's world. In the imitative curriculum the difference of worlds can be tolerated because the thrust of the curriculum is towards initiation into other worlds. The analytic mode examines the world that is. In literature study, of course, there can be both exploration of other worlds and the sharpening of analytic tools on selections dealing with those other worlds and on selections dealing with the students' own world. The problem of motivation is again a serious one, for there needs to be a desire to analyze something, to understand how it works for the learning to be effective. It is for this reason that many analytic curricula start with the students' immediate world on the assumption that there is an intrinsic interest in understanding how it works. Teachers might even compose an analytic curriculum using only student produced or school produced materials; such have been quite successful.

2.6.2

indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class: --selects materials, environments, situations that are sufficient and adequate to the concepts being taught (e.g. chooses enough poems to illustrate the concept of metaphor) --selects materials, environments, situations that are appropriate to the assumed	--same as at left except that the criterion of the second indicator would be modified: --selects materials, environments, situations that are appropriate to the abilities, interests, and backgrounds of the students as determined through the diagnostic procedures earlier used and which conform to the constraints imposed by school architecture and organization, and by the community

interests, abilities, and backgrounds of the students (e.g. builds a unit on metaphor beginning with metaphors in the world of the students)

--selects materials, environments, situations that adequately cover the objective and are more than sufficient to occupy the time of the students

--develops appropriate bridging activities or advance organizers (e.g. to lead from looking at metaphors to a writing assignment using metaphor)

--provides a rationale for the selection that has been made

FUNCTION: SELECTS MATERIALS, ENVIRONMENT, SITUATIONS

Approach: Generative

SKILL DESCRIPTION: The criteria for selection would be interest and availability first, although the instructional goals also form a criterion that must be applied. In the generative approach, particularly as it would apply to enhancing talk and writing, the emphasis would be on environments and situations more than materials. Certainly classroom arrangement so as to allow for creative dramatics is important, so is the availability of space and materials for other forms of expression--collage, film, television, and the like. Materials for students to read, watch, or listen to might be proliferated more than with the other types primarily because there is greater individual focus. Such would certainly be the case of individualized reading programs, many of which have a generative base.

A major criterion for selection is, of course, feasibility. It is difficult to have an exciting creative program using video-tape if the equipment is not available. It is equally difficult if there are going to be a series of frustrations in checking the equipment out. Teachers, particularly new teachers, should

be aware of the material or administrative constraints on their imaginations before they try that "groovy" idea they read about in the latest issue of English Journal; in particular, they must beware of promising things to their students if they cannot make arrangements for the things to come about.

3.6.3 indicators

college classroom
or learning lab

Given a hypothetical class:

--selects materials, environments, situations that will stimulate the desired form of behavior as expressed in the objectives (e.g. identifies aspects of a story likely to elicit student comment)

--selects materials, environments, situations that are appropriate to the assumed interests, attitudes, and aptitudes of the students (e.g. chooses poems similar in topic or theme to those already preferred by the class)

--selects materials, environments, situations that will be more than sufficient to occupy the time of the students

--develops appropriate bridging activities or advance organizers (e.g. a question to lead from discussion of a story to creative dramatics based on that story)

--provides a rationale for the selection that has been made

microteaching or
actual classroom

--same as at left except that the second indicator should read:

--selects materials, environments, situations that are appropriate to the interests and backgrounds of the students as determined through the diagnostic procedures earlier used and which conform to the constraints imposed by the schools' architecture and organization and by the community

FUNCTION: PREPARES MATERIALS

Approach: Imitative, Generative, Analytic

SKILL DESCRIPTION: In any classroom, a teacher may well find that the materials presented in the commercial or packaged sources will not suffice for the instructional objectives and the class. The teacher will therefore be forced to create materials. In English, these might be instances of language (tapes, records, film, or transcripts or invented sentences and paragraphs to serve as models, exempla for analysis, or stimuli for activities), visual or other stimuli for writing or talk, selections for literary study or as counter-examples to examples in the texts. Such preparation may well involve technical skill in reproducing material or skill in locating materials that might be available through libraries, instructional centers, and the like.

0.7.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a set of objectives and the absence of readily available materials: --selects appropriate sources of ancillary materials (e.g. *High Interest Easy Reading*) --uses bibliographic tools (e.g. can decipher age codes on juvenile fiction) --creates print and other forms of classroom materials --indicates when student-prepared materials might form adequate substitutes for commercial material (e.g. student papers as exempla)	--same as at left

FUNCTION: ARRANGES MATERIALS, ENVIRONMENTS, AND SITUATIONS

Approach: Imitative

SKILL DESCRIPTION: In the imitative approach, the sequence that is striven for is a sequence of objects. Such a sequence might be historical or geographical, both of which are popular with imitative teachers. Another possible sequence is from low culture to high culture--particularly when one is dealing with the mass media. With respect to language and composition, the sequence might well be a sequence of sophistication, a sequence dependent on what the students can master. In syntax, for instance, the sequence might go from subject-verb agreement to subordination to detailed aspects of modification. Very often in composition, the sequence goes from smaller units (diction) to larger units (the whole essay) or vice versa. Such sequences are often arbitrary and defensible only according to some rationale external to what is known about the students. Such is also the case with most literature sequences and many language sequences.

1.8.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	--same as at left plus:
--arranges materials, environments, situations according to a principle that is defensible in terms of the objectives already specified	--arranges a sequence beginning from a point related to the diagnosed state of knowledge of the students (e.g. having found what the student's knowledge of Greek mythology is, arranges a sequence of new Greek myths to enable them first to consolidate their knowledge and then to move on to the unfamiliar)
--arranges material in a sequence from the assumed known to an unknown (e.g. a language unit from simple to complex sentences)	
--indicates points of junction between segments and transition (e.g. indicates various means of moving from Greek to Norse myths)	
--gives a rationale for the arrangement that has been chosen	

FUNCTION: ARRANGES MATERIALS, ENVIRONMENTS AND SITUATIONS

Approach: Analytic

SKILL DESCRIPTION: The arranging principle in the analytic approach rests on the teacher's sense of the increase in cognitive difficulty of the material. The teacher strives for a sequence that can approximate the steps that would be covered in a theory of mastery learning, although the problem for a language teacher in adapting the mastery principle is that of the interrelationships of the language system. In writing, for example, the student must simultaneously or seriatim contend with the problems of invention, arrangement, and style; with word, sentence, paragraph, and essay; with self, subject, and audience. Any systematic division of the acts of composition for the purposes of teaching presents a practical problem to the teacher and the student. As with the imitative curriculum so with the analytic; any division and sequencing is arbitrary. Its defenses rest on theoretical grounds not on empirical ones. The same holds true of an analytic reading curriculum; which facet of a selection (its theme, its language, its writer, its structure) should be dealt with first is arbitrary.

2.8.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	--same as at left and:
--arranges materials, environments, situations according to an analytic taxonomy (e.g. arranges language unit in order from knowledge of terms to application)	--sets beginning of sequence at the diagnosed level of ability of the student
--indicates connecting points between skill activities (e.g. transition from comparison and contrast writing to analogical writing)	

--gives a rationale for the sequence chosen and for the taxonomy

FUNCTION: ARRANGES MATERIALS, ENVIRONMENTS, SITUATIONS

Approach: Generative

SKILL DESCRIPTION: The principle of arrangement in the generative approach is based less on the subject matter than on a notion of the developmental stages of the individual. The teacher might apply knowledge of developmental psychology to the problem of arrangement; alternatively the teacher might apply a sense of what is more simple and what is more complex in order to arrange the material. Because the language is multi-faceted (whether it be the language that the students read or attend to through other senses or whether it be the language the students produce through talk, writing or some other medium) the definition of complexity is also multi-faceted. An utterance is simple or complex phonologically, lexically, semantically, syntactically, in terms of larger organizational principles, and in terms of the total theme or fantasy that is portrayed. Because of the multi-dimensionality of complexity, the problem of sequencing materials or activities is more probably arbitrary than based on developmental psychology. It may be more important that the argument for the sequence be soundly defended than that it be supported by empirical data. In literature, the choice of moving from psychological to social issues and the reverse might also be arbitrary.

3.8.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	--same as at left plus:
--arranges materials, environments, situations according to a developmental or incremental scheme that has current acceptance (e.g. in a literature unit,	--bases the beginning of the sequence on the diagnosed level or area of interest of the students

branching from one selection to others related by author, mood, theme, etc.)

--gives a rationale for the sequence and the scheme

--indicates connecting points between experiences (e.g. relationship between improvisation and writing about the same topic)

FUNCTION: JUSTIFIES MATERIALS, ENVIRONMENTS, SITUATIONS

Approach: Imitative, Generative, Analytic

SKILL DESCRIPTION: Often, teachers of English have to justify what they are doing to parents, administrators, colleagues, and students. Most frequently, the justification problem arises when someone does not like what a teacher is doing, and most frequently the issue arises with book selection. Censorship is common in secondary school English; although we are ambivalent about the issue of censorship, we are sure that a teacher must be prepared to deal with the issue. There are procedures, particularly those laid down by the National Council of Teachers of English and the School Journalism Association for a teacher who needs to deal with community or parental pressures to censor student reading and writing.

0.9.1

indicators

college classroom
or learning lab

Given a challenge to some aspect of a planned curriculum:

--provides an educational justification for the challenged aspect

--indicates procedure for dealing with challenge

microteaching or
actual classroom

Given a challenge to some aspect of the curriculum:

--uses proper professional criteria for dealing with challenges

--presents an educational justification for the challenged aspect

--follows appropriate appeal procedures

FUNCTION: MOTIVATES STUDENTS

Approach: Imitative

SKILL DESCRIPTION: From the imitative approach, the problem of motivation is the problem of convincing students that the models are worthy of attention and emulation. The appeal most frequently used is that of self-improvement for financial or social gain, to move from a "lower-class" language style to a "middle-class" one.

1.10.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--selects a series of motivational devices to convince students that they should know material (e.g. shows how group pride can emerge from reading Black poetry	--selects a series of motivational devices to convince students that they should know materials
--justifies the selection	--uses these devices in the classroom in such a way that students acquiesce to the teaching situation

FUNCTION: MOTIVATES STUDENTS

Approach: Analytic

SKILL DESCRIPTION: In the analytic approach, the problem of motivation is the problem of convincing students that the procedures learned will be procedures that will be practically useful. The appeal most frequently used is the appeal of intellectual or some other form of power.

2.10.2 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--selects a series of motivational devices to convince	--selects a series of motivational devices to convince students they

students that they should acquire certain skills (e.g. the advantage of semantic analysis in consumerism)	should acquire certain skills
--justifies the selection	--uses these devices in the classroom in such a way that students acquiesce to the teaching situation

FUNCTION: MOTIVATES STUDENTS

Approach: Generative

SKILL DESCRIPTION: In the generative approach, the problem of motivation is to convince students of the educational benefit of engaging in certain activities and practicing certain behaviors. Often the appeal used is that the activities are pleasurable, but often this justification is not sufficient, since pleasure is not as strong a motivating device as is ambition. Besides, students often consider school and pleasure as oil and water. The appeal of the generative curriculum may well be to the instincts of group solidarity, self esteem, and the like.

3.10.3 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--selects a series of motivational devices to convince students that the activities they are to engage in are to be undertaken with all due seriousness and are worthwhile (e.g. promotes English-related questioning by demonstrating that mental health is related to exploring feelings through language)	--selects or creates a series of motivational devices to convince students that the activities they are to engage in are to be undertaken with all due seriousness and are worthwhile
--justifies the selection	--uses these devices in the classroom in such a way that students acquiesce to the experience

FUNCTION: ESTABLISHES RELATIONSHIPS BETWEEN STUDENTS, SUBJECT AND REAL WORLD

Approach: Imitative, Analytic, Generative

SKILL DESCRIPTION: This function is that of making English "relevant"; and, regardless of approach, is the means by which a teacher makes classroom language activities a part of the student's transactions with the world outside the classroom. It is also the function of bringing the world into the classroom. For the imitative teacher, it might mean using a current political event as a way of indicating the contemporaneity of Julius Ceasar. For the analytic teacher, it might mean using a new ad or an editorial as the content for semantic analysis, or student slang as the basis for lessons in lexicography. For the generative teacher, it might mean a discussion of the effect of current television series on student-parent relationships, or using an explosive racial situation as the starting point for role-playing.

0.11.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a definition of a class and specified objectives:	Given an actual class and learning objectives:
--shows how an out-of-class event might be transformed into a learning activity	--relates an out-of-class event to the ongoing activities of the class
--shows how objects and events in popular culture might be used in English class	--relates objects and events in the students' world to objects and activities in English class
--indicates association of conventional content of English to the world outside the classroom	

FUNCTION: ESTABLISHES CLIMATE FOR LEARNING

Approach: Imitative, Analytic, Generative

SKILL DESCRIPTION: This is the function of establishing an atmosphere or relation among students and teachers conducive to learning. In part, it is related to the personality of the teacher. Some teachers are formal and comfortable in structured situations; some are self-effacing and do best in a class wherein they are invisible; some can improvise well. A teacher learns to modify pedagogical approaches in terms of personal style, but also in such a way to create an atmosphere in which personal style, approach, and scudent attitudes are harmonized. The skill is a reflective skill based on self-observation.

0.12.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual situation:
--describes notion of an "ideal" class - the one in which he or she would feel most comfortable	--conducts self in such a way as to be comfortable in appearance
--identifies the variables he or she must manipulate to bring about states of comfort	--adjusts style of behavior in light of student expectations and behavior
--assesses psychological climate evident in an observed class	

FUNCTION: CONDUCTS INSTRUCTION IN THE CLASSROOM

Approach: Imitative

SKILL DESCRIPTION: Although we have associated the imitative mode with an expository or didactic style of teaching, such need not be the case. A great part of instruction will be concerned with the presenting of models to students, with

--adjusts expository procedures to account for the differential learning of the members of the class

FUNCTION: CONDUCTS INSTRUCTION IN THE CLASSROOM

Approach: Analytic

SKILL DESCRIPTION: Although we have associated the analytic approach with the kind of teaching that might be termed structured inquiry or the inductive method, we recognize that the analytic teacher will use both more and less teacher-centered devices and procedures in seeking to fulfill the objectives that have been set. The analytic mode is concerned with the development of skill, particularly the verbal skills associated with analysis, application, and synthesis. The practices of those skills is important, and the teacher needs to monitor the practice through a structured sequence--usually moving from the less complex to the more complex. In language, this movement might be from simple transformations to complex ones; in writing, from definition to comparison and contrast; in literature, from distinctions between prose and poetry to distinctions between two kinds of sonnet, or between the comedy of the Marx brothers and the comedy of W. C. Fields.

Although the mode of teaching is often inductive, one might well present students with certain basic information in an expository fashion. One might also use a much more open technique such as that of allowing students to talk about whatever response to a literary selection might occur to them and then analyzing the causes of that response, or else conducting an open session and then moving to a semantic analysis of that session. One might generalize by saying that the structure will be tighter if the object of analysis is some linguistic artifact, looser if it is the language of the students.

telling them about language, writing, talking, literature, and the like. Didactic teaching, however, does not always imply lecturing. Programmed instruction and its fraternal twin, computer-based education, are also strongly didactic and can be used in the imitative mode. There is the essential component of the imitative mode that it presupposes a goal or ideal towards which the student should tend. Such a component may well imply practice exercises, directed inquiry, a mastery model, and independent study. In language teaching, exercises and games are often used to get students to emulate certain models of complex sentences or to acquire a vocabulary. In writing, such games as parody and controlled writing exercises may be used. In literature dramatization, independent reading programs, with a controlled list, and undirected discussion of themes and issues might well form a part of instruction. The didactic element may come through the materials offered, through the type of classroom interchange or through the type of activity assigned for in-class or out-of-class work, but it is always there.

1.13.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--outlines a set of instructional strategies and learning activities which will achieve the objectives that have been stated	--prepares a set of instructional strategies and learning activities to achieve the objectives that have been set (e.g. translates literary events into a dramatic situation for improvisation)
--identifies choice points in a lesson (e.g. where one can move from talk to writing)	--modifies those strategies or activities in the light of student behavior either through diagnostic procedures or through the on-going experience of classroom interaction
--provides a rationale for the relationship of objectives and activities or strategies	--monitors verbal and non-verbal feedback as to whether students understand the nature of the tasks they are asked to perform
--gives an illustrative example to classmates	

2.13.2

indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual classroom:
--outlines a set of instructional strategies and learning activities to achieve the objectives that have been stated	--prepares a set of instructional strategies and learning activities to achieve the objectives that have been set
--provides a rationale for the relationship between the objectives and the activities or strategies	--monitors verbal and non-verbal feedback as to whether students are acquiring the skills they have been asked to perform (e.g. explains and gives examples of terms in literary criticism if students seem unable to use them)
--identifies choice points in a lesson (e.g. when one can move from non-directed to directed inquiry or to explanation)	--modifies strategies and activities in the light of feedback (e.g. relates semantic analysis to real-life language situations)
--gives an illustrative example to classmates	--adjusts inquiry strategies to account for differential mastery in the class

FUNCTION: CONDUCTS INSTRUCTION IN THE CLASSROOM

Approach: Generative

SKILL DESCRIPTION: The generative mode is associated often with a non-directive style of teaching, but we have found that the most ardent adherents of the generative mode do not espouse a wholly non-directive approach. The generative mode means that there is more pre-structuring of the lesson, more teacher preparation. The actual teaching might be unstructured inquiry, although there is often a subtle structure evident to the eye of the trained observer not available to that of the student. A generatively inclined teacher might well have occasion to give an opinion or a demonstration, might well provide a structured inductive lesson. More often than not, the appearance of the classroom will appear less teacher-centered, more focussed on student activity and even on student conflict. In language, the teacher might set up instances for improvisation but leave the improvisation to the students; in writing, the teacher might provide stimuli; in literature, selections for the students to respond to as they saw fit. Often the generative teacher will switch into the analytic mode after the performance of the students in order to examine what it is they have done: what sort of procedures and strategies they have employed in improvisation, writing, or response, for instance. Certainly the generative teacher will tend towards an atmosphere of activity--student activity rather than towards a lecture or socratic classroom.

3.13.3 indicators

college classroom
or learning lab

Given a hypothetical class:

--outlines a set of instructional strategies and learning activities to achieve the specified objectives

--provides a rationale for the relationship between the objectives and the activities or strategies

--identifies choice points in a lesson (e.g. where one can invite collage or filmmaking as opposed to writing)

--gives an illustrative example to classmates

microteaching or
actual classroom

Given an actual classroom:

--outlines a set of instructional strategies and learning activities to achieve the specified objectives

--monitors verbal and non-verbal feedback as to whether students are participating in the activities as willingly as had been planned and as thoughtfully

--adjusts strategies and activities in light of that feedback

--adjusts inquiry strategies to account for differential mastery and willingness in the class

FUNCTION: CONDUCTS FORMATIVE AND SUMMATIVE EVALUATION OF STUDENT LEARNING

Approach: Imitative

SKILL DESCRIPTION: In the imitative mode, the teacher will need to ascertain whether the students have acquired the concepts that form the substance of the curriculum. Formal testing or informal questioning and inventorying throughout the course of instruction will be one of the main forms of formative evaluation. That evaluation might well move from the lowest level of the taxonomy to such higher ones as application and synthesis. The evaluation might also account for the affective objectives of acceptance and possession of the desired generalized set.

Summative evaluation would probably deal with the higher rather than the lower cognitive and affective behaviors: with whether students can make judgements on the basis of the linguistic or rhetorical models and styles they have learned, whether students can classify and relate the literary works to one another or to a central concept: whether students appear to have imbibed the desired value system.

1.14.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--creates specifications for formative and summative evaluation of achievement of the specified objectives	--creates specifications for formative and summative evaluation of achievement in terms of specified objectives
--provides illustrative measurement devices	--creates measures for those specifications
--provides a rationale for the devices and the specifications in light of the objectives	--administers and scores these measures (e.g. makes helpful comments on book reports)
	--makes a summary statement about student achievement in terms of achieved knowledge

FUNCTION: CONDUCTS FORMATIVE AND SUMMATIVE EVALUATION OF STUDENT LEARNING

Approach: Analytic

SKILL DESCRIPTION: In the analytic mode, formative and summative evaluation would tend to deal more with middle range cognitive behaviors: application, analysis, interpretation, and synthesis. Summative evaluation would deal with the upper end of this spectrum and with the skills of evaluation. Students would be asked to apply the schemata they have learned to linguistic phenomena, to derive principles and generalizations, and to perform the intellectual tasks of a scholar in language or literature. As in the imitative curriculum, the affective objectives would also be found among the higher ones, such as "generalized set."

2.14.2 indicators

college classroom
or learning lab

Given a hypothetical class:

--creates specifications for measures of formative and summative evaluation of skill acquisition in both controlled and free situations

--provides illustrative measures to suit specifications

--provides a rationale for the specifications and the adequacy of the measure

microteaching or
actual classroom

Given an actual classroom:

--creates specifications for formative and summative evaluation of skill acquisition that adequately reflect the course objectives

--creates measures for those specifications both in controlled and free situations

--administers and scores those measures (e.g. provides encouraging and helpful comments on student papers)

--validates measures according to other records of student skills

--makes a summary statement about student acquisition of desired skills and aptitudes

FUNCTION: CONDUCTS FORMATIVE AND SUMMATIVE EVALUATION OF STUDENT LEARNING

Approach: Generative

SKILL DESCRIPTION: In the generative mode, the emphasis would be on measuring skills dealing with production of a unique communication as well as with comprehension and the various objectives listed under responding in the affective domain. In many cases, the teacher might make greater use of observational systems and content analysis procedures than of formalized testing procedures. Interest inventories and activity records might also be used. These latter might well form the basis for much of the summative evaluation.

3.14.3 indicators

college classroom
or learning lab

Given a hypothetical class:

- --creates specifications for measures of formative and summative evaluation of language development and language socialization that reflect the stated objectives of the curriculum
- --creates illustrative measures or modes of ascertaining the achievement specified
- --provides a rationale for the specifications and the adequacy of the measures

microteaching or
actual classroom

Given an actual classroom:

- --creates specifications for measures of formative and summative evaluation of language development and language socialization that reflect the stated objectives as modified by instruction
- --creates measures or observation schemes to insure coverage of the specifications
- --administers and scores those measures
- --validates those measures according to other observations
- --makes a summary statement about the development of each student according to the specified objectives

FUNCTION: CONDUCTS FORMATIVE AND SUMMATIVE EVALUATION OF TEACHING AND CURRICULUM

Approach: Imitative, analytic, generative

SKILL DESCRIPTION: In this reflexive aspect of teaching, a teacher asks, "how am I doing?" The concern here is less with the achievement of the students as individuals than with the accomplishments of the group. Although the individual is important, the teacher's evaluation of teaching and curriculum may look at segments of the class: the less able, the unmotivated, the average, or the troublemakers.

The formative aspect of this evaluation might well lead the teacher to change materials, techniques, or situations and environments. In the imitative curriculum the teacher might change examples; in the analytic, exercises; in the generative, stimuli. A teacher might modify instruction to become more authoritarian or more student-centered. Such decisions would be based on how well the group seemed to be doing on the measure of formative evaluation.

The summative evaluation might be comparative--with other teachers and other techniques in a controlled or uncontrolled experimental situation. More frequently, however, summative evaluation of teaching and curriculum is done in terms of past performance or in terms of some ideal set by the teacher. The function of this evaluation is to enable the teacher to shift objectives, materials, environments, justifications, situations, teaching techniques and the like. This is the "wait till next year" function of evaluation.

It may be that the evaluation of teaching and curriculum may employ the same measures as the evaluation of student learning. There may also be some other form of evaluation: student questionnaire, peer evaluation, supervisory evaluation and the like.

0.15.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--creates specifications for formative and summative evaluation of teaching and curriculum (e.g. decides on group indices of success) --provides illustrative measures to fit specifications --justifies specifications and rationale in light of objectives	--creates specifications for formative and summative evaluation of teaching and curriculum (e.g. creates indices for cognitive learning, attitudes towards subject, attitudes towards school and class) --provides measures to fit specifications (e.g. creates observational index of group participation) --administers measures and scores them looking for general trends --evaluates teaching and curriculum in light of results (e.g. if finds class appears bored, makes decision concerning pre-planned sequence of activities or experiences)

FUNCTION: EVALUATES UNINTENDED OUTCOMES

Approach: Imitative, Analytic, Generative

SKILL DESCRIPTION: Any act of teaching may have outcomes other than those expected by the teacher. In medicine these are often called side effects. One side effect might be disenchantment with school; another might be an increased interest in the subject. One side effect of the imitative curriculum might well be a snobbishness and cliquishness of those who are "in." One side effect of the analytic curriculum might be a tendency to be uninterested in language or reading, or to become so distant as to remain unaffected by any linguistic stimulus; another might be to use those skills in dealing with out-of-class phenomena. From generative curriculum might come a tendency towards anti-intellectualism and a failure to be self-critical.

The teacher notes these side effects in the demeanor of students in class and out, in attitudes and comments passed on through other teachers or students, through general trends in behavior. A teacher should, of course, beware ascribing all credit or blame to what went on in a particular class, but there may be some connection. One cannot say that a single English class produced a great writer or critic or a drop-out. Such would be hybris on the part of a teacher. Nonetheless, trends might be observed.

0.16.1 indicators

college classroom or learning lab	microteaching or actual classroom
Given a hypothetical class:	Given an actual class:
--projects possible unanticipated outcomes of a proposed course of instruction (e.g. evaluates criticisms of a curricular approach)	--observes behavior of students, colleagues, and parents to determine if unanticipated outcomes of instruction exist (e.g. notes attitude and value shifts, absenteeism, etc.)
--indicates indices of these outcomes in individual or group behavior of students	--evaluates the behavior in terms of possibility of unanticipated outcomes

CHAPTER 9

COMPETENCIES FOR SCIENCE TEACHERS

James R. Okey, Hans O. Andersen, and Jerry L. Brown

Introduction

This chapter contains a description of five teaching models for science teachers in elementary or secondary schools. The models are at the same time realistic and idealistic; they describe how some persons presently teach and how others would like to teach if conditions were right. Included with each model is a description of its special features and purposes. Following these descriptions is a list of competencies or skills that a teacher would need to implement each of the models. Along with each competency is a set of "indicators," which describe or indicate how the competency might be assessed.

Teachers use varied procedures to teach children. Some teaching procedures are effective with some students and not with others, with some objectives and not with others, and with some teachers and not with others. There is no evidence that there is a single best teaching model. For this reason, no single model of teaching is advocated in this chapter. Five models were chosen to attempt to describe teaching practices that are common today and may be more common in the future.

Most persons who examine the descriptions of the five models, or the skills needed by a teacher to implement them, will not find an exact description of their own teaching. Most teachers follow an eclectic approach, using strategies taken from several "pure" models in their teaching. By setting apart five different teaching models we are not suggesting that teachers stop this practice or that teacher educators attempt to teach beginners to use a single approach. Instead, the intention is to isolate several distinguishable models of teaching and describe purposes for which each is appropriate.

Throughout the chapter we speak of competencies for teachers instead of differentiating between prospective teachers and employed teachers. Past practice has been to focus training on prospective teachers during the time they are completing an undergraduate degree. Foundations and methods courses at the university and student teaching in a field setting are the sites for learning and assessing competencies. That practice is changing. More emphasis is being placed on the continued training of teachers after they are employed. The competencies described here are intended for both pre- or in-service teachers.

Fewer than fifty competencies are listed in this chapter. This may seem like a short list of skills for describing the job of a teacher. We have adopted what Popham (1973 a) calls a "minimal competencies" approach. That is, every skill that a teacher might use in the job is not included. Instead, the approach has been to set out what the authors feel is a minimal set of competencies for carrying out the functions of a science teacher.

In the remainder of this chapter, the five science teaching models will be described in some detail. Reasons for selecting the models will be given and their features and unique purposes will be presented. Following this, the competencies associated with the five models will be listed along with examples of procedures that could be used to assess the skills in classrooms and on-the-job settings.

Science Teaching Models

Educational researchers of the first half of the century spent considerable time attempting to identify a most effective method for teaching science. The story is well known--Method A is better than B, B is better than A, or there is no significant difference. Because of the inconclusiveness of the findings, investigations which attempt to show the general superiority of one teaching method or another have been challenged as an effective means of studying the teaching act.

In the sixties, studies of teacher verbal behavior dominated the field. Teacher behaviors were defined, observation schedules developed, teachers observed, and correlations drawn. These efforts, while mainly correlational, led to the identification of 11 major teacher behaviors that are associated with student achievement (Rosenshine and Furst, 1972). For perhaps the first time in educational history, research findings had an effect on teacher training programs. Preservice teachers were often taught elaborate classification schemes, systematically observed teacher behavior, including their own, and were provided opportunities to practice specific skills through microteaching and similar experiences.

Expertise with isolated skills is not enough. To become a successful science teacher one must develop style (Brandwein, 1965); the teacher must be able to select and use different skills in different sequences in response to his or her student population and the nature of the content being taught. The concern is no longer attempting to discover the best method or the best model to use but to discover how combinations of methods and models can influence the development of children.

Model Descriptions

The model descriptions focus attention on environments that have both long and short term effects on the development of children. In most respects the approach is similar to that taken by Joyce and Weil (1972). The narrative provides a description of the major assumptions behind a model of teaching, the roles of teachers and students, and a general sequence.

The five models present three major learning environment choices as depicted by the teacher's role. The first two models describe the teacher's role as a transmitter of bodies of organized knowledge. The second two models describe the teacher as an organizer of an environment that would facilitate student discovery. And the last rather eclectic approach describes the teacher's role as a diagnostician and prescriber. (See Figure 1).

Expository Models

Lecture and Lecture-Demonstration

The inductive and deductive models (A & B in Figure 1) would be used when the teacher percieves a need for transmitting to students an organized body of information. The student would be viewed as an information processor whose "mind" contains a bank of potentially relatable concepts. The teacher attempts to transmit information in a form that the student can relate to previously learned information. If relatable items exist, the student will be able to process the information thereby building new structures and additional capability to incorporate more information and thereby continue learning.

Teacher Role	Model
Transmitter of organized bodies of knowledge	A. Deductive Lecture or Lecture Demonstration B. Inductive Lecture or Lecture Demonstration
Inquiry Guide or Director	C. Enquiry
Inquiry facilitator	D. Inquiry
Diagnostician Prescriber	E. Mastery

Figure 1. Role of the teacher for different teaching models.

The assumption that characterizes both models is that students will learn if the information matches the student's capability and is presented in the appropriate structured sequence. The models differ in their assumptions concerning which sequence, deductive or inductive, is most appropriate.

Support for the deductive model can be derived from the research of David P. Ausubel (Ausubel and Robinson, 1969). The most appropriate sequence of presentation involves proceeding from the generalizations used as the organizer through a sequence of lesser abstractions to specific examples. The generalization would serve as an organizer for lesser abstractions and specific examples. According to the inductive model, content should be arranged in sequence from simple to complex, or concrete to abstract. The teacher in a lecture should "build" the generalization by sequencing specific examples leading through lesser abstractions and examples to the generalization.

Deductive Sequence

The first step in implementing the expository deductive model is presenting the big idea or problem. The user of the model assumes that the big idea or problem will serve as an organizer for the information being presented. The organizer aids the student in internalizing the incoming information. The organizer and sequence of instruction are arranged by the teacher who progressively introduces lesser abstractions and consistently relates all information to the organizer. For example, assume you wished to teach students about neutralization reactions. Instruction would be initiated by introducing the principle (Acid + Base = Salt + Water), then descriptions of acid-base reactions would be provided and finally the nature of acids and bases that makes this type of reaction possible would be examined. At each step of instruction the information being presented is related to the principle. This may be accomplished directly by the teacher's lecture or indirectly by a teacher question. The practice opportunities may be verbal or activity centered as in the case of the demonstration. During practice, the atmosphere may be informal and considerable give and take between teacher and student may occur.

Inductive Sequence

The sequence of presentation in the expository inductive model proceeds from specific to general. The teacher selects and presents a series of specific instances percieved to be sufficient to permit the student to understand the generalization. The specific instances and their order of presentation are structured by the teacher. For example, assume once again that you wish to teach students about neutralization reactions. Initial instruction would involve identifying acids and bases. Next, the reaction of a specific acid and base would be studied. Then other acid-base reactions would be examined and finally the generalization would be made either directly by teacher lecture or indirectly by the teacher questions. Verbal or "real" practice opportunities may be provided and the teacher may involve the student in discussions of the specific instances. The teacher continually focuses the direction of all questions and teacher responses toward identifying the generalization and the relationships between the specific instances and the generalization that is to be derived.

Discovery Models
(Enquiry and Inquiry)

The discovery models would be used when the teacher wants to provide to students the opportunity to discover that (1) scientific knowledge stems from the interpretation of data, (2) the search and interpretation of data is based on concepts and assumptions that change, hence knowledge changes, (3) scientific knowledge is based on best tested facts and (4) the development of scientific knowledge continues. The major assumption of the discovery models is that if students are involved in testing and thinking they will continue functioning as inquirers. The two discovery models differ in their assumptions concerning the appropriate teacher role. In the Enquiry model, the teacher is a guide and creator of opportunities for students to examine investigations that have already been performed. In the Inquiry model, the teacher is a facilitator, respected colleague and assistant to the student who is the originator of the inquiry.

Support for the Enquiry model is derived from Schwab (1963), Bruner (1960), Piaget (Flavel, 1963), Gagne (1970), Scott (1970) and many others. This is roughly the model that was embraced by the curriculum developers of the sixties and can be epitomized by Bruner's statement that physics is best learned by acting like a physicist (Bruner, 1960). The major assumption of this model is that when students are guided through exercises paralleling the activities of scientists they will learn how to be investigators and gain a greater appreciation of science. The teacher's role would be identifying, selecting, and presenting opportunities for student investigation and encouraging students to solve the problems posed or suggest means by which they may be solved. It is the teacher's responsibility to structure discrepant events and other activities that create an atmosphere conducive to student investigation by accepting and using student ideas, encouraging students to criticize, and reinforcing behaviors of students. The word Guide is a single word description of the teacher's role in teaching by Enquiry.

The Inquiry model is an extension of the Enquiry model. Hence, support for it can be drawn from the same sources plus such writers as Hawkins (1965), Romey (1972), and Samples (1972). Unlike Enquiry in which students basically reinvestigate a problem, in the Inquiry model the student is the inventor of the problems and the procedures. The teacher is a facilitator. The major assumptions of this model are that students can, with little assistance, invent problems, design experiments, collect and evaluate data and draw relevant and correct conclusions. The role of the teacher would involve assisting the student in all phases of a student selected investigation. The teacher may assume a direct role when it is necessary for a student to develop a specific skill that is needed by the student. The teacher would also assume many "project manager" type activities associated with facilitating continued investigation (arranging transportation, locating resources, etc.). However, the word facilitator describes his role more accurately than the word guide because the student is the initiator of the activities.

Enquiry Sequence

The teacher following the Enquiry model would need to be a collector of science opportunities appropriate for students. The initial instructional activity would be to identify, select, and pose a problem in a manner that would involve the student in identifying problem statements. The teacher would need to effectively use questions, including probing techniques and reinforcement, to guide students to draw from their previous experiences to (1) hypothesize explanations (2) discriminate between testable and untestable hypotheses and (3) develop and criticize research designs. Basically, the teacher would attempt to get the students to pose questions that could be answered by completing an activity (investigation or experiment) that the teacher has previously arranged. Once the student has posed the question and suggested means to answer it, the teacher would focus attention on the specific experiment selected for the student to do. Basically, the teacher would say, "I just happen to have some equipment and materials here that you could use to answer the question." The focusing may be accomplished by describing the experimental procedures or by posing a specific problem, indicating available resources and guiding the student through designing the specific experiment. When the students are involved in the experiment or investigation, the teacher would again employ questioning, probing, and reinforcement techniques to guide the student in collecting accurate data, displaying and interpreting the data and drawing appropriate conclusions. In essence, the teacher selects the investigation, the procedures, indicates what data to collect, and is the final evaluator of the data.

Inquiry Sequence

The teacher using the Inquiry model would act as a facilitator; his initial role is one of creating an atmosphere of mutual trust and respect. He must convince students that (1) he believes that they have the ability to select and pursue significant investigations (2) they will be able to pursue problems of their choice and (3) he, as the teacher, will assist them in their efforts. Questioning and probing would be used by the teacher to help students make observations, identify testable hypotheses, develop reliable research designs, select apparatus, criticize and interpret data, draw conclusions and prepare recommendations.

The third major role of the teacher-facilitator is to create opportunities for students to develop needed science skills and actually pursue their studies. The teacher must be an active resource person. The student's interests will often be beyond the capabilities of a single teacher and there will be many times when the student will not be able to continue without assistance. This is a very sensitive point in the model. If assistance is not readily available to students, they may perceive that the instructional scheme is a sham. The teacher must be able to say, "I don't honestly know but let's see if we can find out." The teacher must be able to convince the student that the problem is so interesting and worthwhile that he (the teacher) would also like to find the answer. Teacher behaviors that could follow might include, sitting in the library with the student reviewing literature, locating and involving other people, arranging additional equipment, a laboratory, or a field trip or directly teaching the student a specific skill he needs to continue his effort.

The fourth major role of the Inquiry teacher is to create opportunities for the students to make the knowledge they have discovered public. This may involve (1) arranging seminars and forums, (2) creating a speakers bureau, (3) helping the students prepare manuscripts for publication in local newspapers and even academic journals or (4) helping students prepare scripts for radio or television productions.

Mastery Model

The mastery model would be selected by the teacher when it is important for most students to master the content, skill, or attitude expressed in an objective. The teacher committed to using this model would believe that (1) most, perhaps as many as 90%, of the students can master the established behaviors of the course at an acceptable level (2) there are many individual differences among students and several ways to proceed toward mastery (3) diagnostic tests can be used to identify instructional needs of individuals, (4) teachers can effectively and efficiently prescribe instruction for students, and (5) successful learning is self-supportive; it motivates students to continue learning, (Bloom, 1968). The student is viewed as an individual who generally can master whatever is expressed in an objective if he is given appropriate practice. The teachers' major roles include arranging alternative learning experiences, diagnosing student needs, and prescribing instructional experiences that match student interest and ability.

Mastery Sequence

The initial teaching activity is to involve a student with a task selected by the teacher or by the student. For example, it could be (1) instruction prescribed by the teacher or selected by the student, (2) some kind of preinstructional assessment to determine which instruction should be prescribed by the teacher or could be elected by a student or (3) a personal communication between student and teacher. Once the student begins the activity, the teacher assumes the role of a diagnostician and attempts, through observation, to determine when a student is "off task" or not progressing. When a student is identified as being off task the teacher asks the student probing questions, administers a diagnostic test, or discusses the rationale for the student in an attempt to determine the source of the problem. When the problem is identified the teacher prescribes alternative instruction or creates opportunities for student selection of alternatives. Because the problems interfering with a student's progress may be either personal or instructional, the teacher would approach students, discuss these problems and either attempt to help the student or refer the student to a person or agency that could provide assistance.

Competencies

In this section competencies for science teachers and indicators of these competencies are listed. The competencies have been divided into six subdivisions based on the work of Frieder (1970) and represent different functions of a teacher. The acronym ODPrIME is used to describe the six teaching functions: specify Objectives, Diagnose learners, Prescribe instruction, Instruct learner, Motivate learners and Evaluate.

Several competency statements are associated with each of the ODPrIME teaching functions. One important way that the five teaching models just described differ is the emphasis that they place on certain of these teaching functions. For example, frequent, individual diagnosis of student achievement is central to the mastery model. Diagnosis can and does occur in each of the other four models but not to the same degree. The "instruct learners" function is also a place to find substantial differences among the models. Both of the transmission models and the enquiry model rely heavily on teacher-guided group instruction. In most cases, the inquiry and mastery models will be characterized by independent or small-group instruction.

In no case could it be said that one of the ODPrIME functions applies exclusively to one model and not to the others. Teachers using each of the five models described here would engage in all of the ODPrIME functions. Differences in teaching, however, show up in the degree to which a teacher emphasises one teaching function over another and in the kind and variety of interaction methods used in carrying out the "instruct learner" function.

The indicators listed below each competency statement serve two purposes. First, they help to clarify the competency by giving specific instances of a teacher carrying it out. Second, they suggest points at which different aspects of a competency could be assessed. Note carefully that numerous assessment procedures could be used for any teaching competency. Assessment procedures can vary with the setting in which the competencies are learned (e.g., preservice or inservice), the level at which teachers will teach (e.g., elementary or secondary), and the subject being taught (e.g., biology or chemistry). The intention is to provide enough detail in the indicators to make the competency statement clear and to give examples of how assessment could be done.

FUNCTION: SPECIFY OBJECTIVES

A major function of the teacher is establishing long range goals and purposes and short range objectives that lead to their achievement on a day-to-day basis. Establishing objectives is done alone by some teachers by using curriculum guides, by consulting with students and other teachers, by using commercial sets of objectives, or by a combination of these methods.

In recent years great emphasis has been placed on the use of behavioral or performance objectives. Specific objectives do seem important, although most teachers will have difficulty stating all their objectives in precise language. In addition to specificity, the quality dimension of objectives is important. Competencies directed toward developing a sequence of objectives, and using commercial sets of objectives are included. The overall thrust of the competencies for the "specify objectives" function is to describe skills a teacher can use in a sensible way in the classroom.

SKILL: IDENTIFIES SCIENCE TOPICS MATCHING DEVELOPMENTAL & INTEREST LEVELS OF SPECIFIED GROUP OF STUDENTS

O-1[1]

indicators

college classroom or learning lab	microteaching or actual classroom
Given a description of a group of learners (e.g., age, IQ, SES):	For a specific class:
--lists science topics of probable interest	--conducts a survey to determine topics of interest to students
--describes procedures for assessing interests and developmental levels	--administers tests to determine developmental levels of students
--selects objectives from lists that are appropriate for described group	--talks informally with students to determine science interests

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[1] For identification purposes, objectives associated with specifying objectives are labeled O-1, O-2, etc., diagnose learner objectives are D-1, D-2, etc. and so on through each of the ODPrIME teaching functions.

SKILL: SELECTS OBJECTIVES BY DRAWING ON STUDENT INVOLVEMENT, EXPERTS IN THE SUBJECT, OTHER TEACHERS, CURRICULUM CONSULTANTS, CURRICULUM GUIDES AND COMMERCIAL OR PUBLIC SOURCES

O-2

indicators

college classroom or learning lab

- --selects and defends objectives for a short science unit by consulting teachers, curriculum guides, scientists, and science consultants
- --locates objectives for a science topic from at least three commercial or public sources

microteaching or actual classroom

- --seeks input from students on what they wish to study
- --engages in cooperative objective writing sessions with other teachers
- --orders and uses curriculum guides when preparing objectives
- --seeks advice of science consultants on objectives
- --borrows commercial and public sources of objectives from the curriculum library
- --conducts a poll of parents on objectives they value

SKILL: CONSTRUCTS AND USES PERFORMANCE OBJECTIVES FOR SCIENCE TOPICS & MATERIALS

O-3

indicators

college classroom or learning lab

- --constructs cognitive, affective and psychomotor objectives for a topic
- --identifies objectives students would probably achieve if they studied given materials (e.g., an ESS unit or a BSCS laboratory block)
- --constructs cognitive objectives at different levels following a taxonomy such as that of Bloom

microteaching or actual classroom

- --informs students of objectives when they begin study of a unit
- --(same as at left)

SKILL: SEQUENCES PERFORMANCE OBJECTIVES FOR INSTRUCTION IN SCIENCE

0-4

indicators

college classroom or learning lab	microteaching or actual classroom
Given a specific performance objective: --identifies objectives that precede and follow it in sequence Given a set of performance objectives: --arranges them in sequence from simple to complex Given a science topic: --constructs a sequence of objectives that follows Bloom's Taxonomy	For a given class and topic: --arranges existing objectives in a sequence from simple to complex --prepares a set of objectives (self-constructed and/or selected) for a topic and sequences them using Bloom's Taxonomy or Gagne's categories as a guide

FUNCTION: DIAGNOSE LEARNERS

Diagnosis is used by teachers to find out what students already know before they begin to study and thus start them learning at an appropriate spot in the learning sequence. Monitoring student performance to find out whether instruction has been effective is another important aspect of diagnosis. Formal testing and informal questioning can each be effective means of finding out what learners can and should do next.

An important feature of diagnosis is testing. Diagnostic testing differs from other testing in the purpose for which it is used. Diagnostic testing has little to do with grades. Its purpose is to find out what learners can and cannot do as an aid to making decisions about what they should study or what instructional materials and teaching procedures might work best.

SKILL: CONSTRUCTS TEST ITEMS AND DESCRIBES PROCEDURES FOR MEASURING ATTAINMENT OF COGNITIVE, AFFECTIVE AND PSYCHOMOTOR OBJECTIVES PERTINENT TO SCIENCE INSTRUCTION

D-1

indicators

college classroom or learning lab	microteaching or actual classroom
--constructs test items or situations for measuring attainment of cognitive and psychomotor objectives	--prepares test items or procedures for all science classroom objectives
--lists observations to make for measuring achievement of affective objectives	--records observations pertinent to achievement of affective objectives
	--prepares practical or hands-on tests as appropriate

SKILL: SELECTS AND ADMINISTERS TESTS (VERBAL, WRITTEN, STANDARDIZED) TO OBTAIN INFORMATION ABOUT THE ABILITY AND PERFORMANCE OF INDIVIDUAL LEARNERS

D-2

indicators

college classroom or learning lab	microteaching or actual classroom
--cites features and appropriate uses of norm-referenced, criterion-referenced, formative, and summative tests	--selects and administers standardized tests to obtain normative data
--identifies specific examples of the following standardized tests: comprehensive achievement, science achievement, science attitude or interest	--questions individual learners to assess strengths and weaknesses
--selects and defends an appropriate standardized test when given a description of the type of information needed by a teacher	--uses teacher made written tests for diagnostic purposes
	--maintains records of standardized test scores of individual pupils

SKILL: MAINTAINS AND USES UP-TO-DATE RECORDS OF INDIVIDUAL PUPIL PERFORMANCE

D-3 indicators

college classroom or learning lab	microteaching or actual classroom
Not applicable	--makes entries in record book of student performances
	--inserts anecdotal information in student files for use by others
	--uses pupil performance records when consulting with students about appropriate 'next' tasks

SKILL: ADMINISTERS TASKS TO INDIVIDUAL LEARNERS TO DETERMINE THEIR STAGE OF INTELLECTUAL DEVELOPMENT IN SCIENCE

D-4 indicators

college classroom or learning lab	microteaching or actual classroom
Indicates tasks students can and cannot do from descriptions of intellectual tasks and records of student responses	--administers Piagetian tasks to students following an accepted procedure
Describes procedures for determining the intellectual development of students	--identifies student in pre-, concrete, and formal operational stages
Identifies appropriate and inappropriate behavior by the examiner from videotapes of children being given tasks to assess their intellectual development	--selects classroom activities differentially for students based on their intellectual development

FUNCTION: PRESCRIBES INSTRUCTION

The essential task here for the teacher is to match students with appropriate objectives, materials and procedures. The role of the teacher as a prescriber can vary tremendously from one classroom to another. Prescriptions can be made for individuals or groups, both narrow and wide choices can be given to students about what and how they study, and differing amounts of student involvement may be used in deciding on a prescription. The skills or competencies needed by the teacher-prescriber are in part dictated by the kind of prescriptions they make. For example, if heavy student involvement in prescription is desired, then the skills of consulting and negotiating with students will be more important than for a teacher who makes most prescriptions unilaterally.

To be a skillful prescriber, a teacher must know the materials and techniques of the subject area and know their students. The idea is to match the one with the other in an effective way.

SKILL: SELECTS SCIENCE READING MATERIALS APPROPRIATE TO READING LEVEL AND INTERESTS OF PUPILS

Pr-1

indicators

college classroom or learning lab	microteaching or actual classroom
Given descriptions of several students including information on their interests and reading level:	--assigns readings to students individually and differentially
--selects appropriate reading materials for each student for three different topics	--listens to students read and discusses reading assignments with individuals
--chooses two sets of reading material appropriate for each student	--uses information gained from listening to students to make next selection or suggestion

SKILL: USES SEVERAL MODELS OF TEACHING

Pr-2

indicators

college classroom or learning lab	microteaching or actual classroom
Given different sets of science objectives:	--selects and uses different models of teaching
--selects a model of instruction appropriate for each and defends the choice	--collects data (affective, cognitive and psychomotor) on effectiveness of teaching when using different models of teaching

--interprets data and makes changes in teaching based on interpretation of data

SKILL: USES ALTERNATIVE MATERIALS AND PROCEDURES FOR ACHIEVING OBJECTIVES WITH LEARNERS OF DIFFERING ABILITY AND INTEREST FOR SPECIFIC SCIENCE TOPICS

Pr-3

indicators

college classroom or learning lab

Prepares a resource list of texts, periodical articles, films, filmstrips, transparencies, programed instruction and local resources for teaching a science topic. The resources should include opportunities for students to learn by reading, watching, and doing, and options for students with different reading levels, entry skills and interests

Describes science curriculum materials that have been developed in recent years for the population of students you plan to teach. The descriptions should include a list of primary and supplementary materials, a statement about how the materials should be used, a discussion of special skills needed by the teacher, and a description of the classroom organization needed to use the materials

Designs an opinionnaire for collecting data on the interests of students. Opinionnaire to be administered orally or in written form

microteaching or actual classroom

--makes lists and descriptions of alternatives available to students

--actually differentiates instruction for students

Uses a variety of relevant science materials in the classroom including:

1. science text and trade books
2. science reference books and periodicals
3. laboratory and demonstration equipment
4. science games
5. science films and filmstrips

--discusses science interests with students

SKILL: DEVELOPS SCIENCE INSTRUCTIONAL UNITS THAT INCLUDE THE FOLLOWING ELEMENTS: (a) PERFORMANCE OBJECTIVES, (b) RATIONALE OR PURPOSE, (c) PREREQUISITE OBJECTIVES, (d) PRE- AND POST-TESTS, (e) VARIETY OF LEARNING ACTIVITIES TO USE IN ACHIEVING OBJECTIVES

Pr-4 indicators

college classroom or learning lab	microteaching or actual classroom
Prepares individualized instruction units that include objectives, a rationale, pre- and post-tests, and learning activities that are appropriate for the subject area and grade level of the teacher's choice.	--uses science lessons that include objectives, rationale, pre- and post-tests, and a variety of activities for students

SKILL: IDENTIFIES AND JUSTIFIES APPROPRIATE TASKS FOR LEARNERS BASED ON RESULTS FROM DIAGNOSTIC TESTS OR INTERVIEWS

Pr-5 indicators

college classroom or learning lab	microteaching or actual classroom
Given the diagnostic tests from a class of learners and instructional objectives and materials that are available: identifies an appropriate next task for each student and defends the choice	--uses diagnostic tests and information so gained to make prescriptions --uses individual interviews to cross-validate diagnostic test results --maintains and reviews records to determine effectiveness of prescriptions and suggestions

SKILL: DISCUSSES DATA FROM DIAGNOSTIC TEST OR EVALUATION WITH STUDENTS IN NON-THREATENING, SUPPORTIVE MANNER

Pr-6 indicators

college classroom or learning lab	microteaching or actual classroom
Interprets results from diagnostic tests and describes how to discuss results with students in a non-threatening, supportive manner	Reviews test results with students (on an individual or small group basis) describing the function of the test, the results obtained by the students, and develop a rationale and course of action with students for continued effort. In each case the prescription is made in consultation with the

students and is generated by them to the degree possible.

SKILL: ORGANIZES A CORNER OR SCIENCE LABORATORY AND CLASSROOM FOR EFFECTIVE, EFFICIENT AND SAFE USE

Pr-7

indicators

college classroom or learning lab	microteaching or actual classroom
--diagrams, describes or prepares a model of a science classroom, laboratory or corner	--organizes a science classroom, laboratory or corner in an existing school
	--continually rearranges in an effort to discover a variety of good arrangements
	--evaluates outcomes of varied classroom arrangements

SKILL: IDENTIFIES SOURCES OF EQUIPMENT AND MATERIALS FOR TEACHING SCIENCE AND PREPARES A BUDGET REQUEST

Pr-8

indicators

college classroom or learning lab	microteaching or actual classroom
Prepares a budget request for a hypothetical teaching situation	--assists the department chairman in locating least expensive sources of equipment and materials
Identifies supplies and equipment for teaching specific materials or units (e.g., an SCIS unit or the ESCP materials)	--has a wide variety of inexpensive resources in classroom or laboratory
	--collects catalogs of science equipment and materials
	--maintains a list of needed equipment and materials throughout the school year

SKILL: USES SCIENCE TEACHING APPARATUS COMMONLY EMPLOYED IN TEACHING SCIENCE AT SPECIFIC GRADE LEVELS

Pr-9

indicators

college classroom or learning lab	microteaching or actual classroom
--demonstrates use of a wide variety of science equipment appropriate for a preferred grade level	--demonstrates use of equipment to students
	--helps students gain skill in using equipment
	--provides for efficient retrieval and storage of equipment by students

SKILL: PLANS AND CONDUCTS OUT-OF-CLASS TRIPS AND ACTIVITIES

Pr-10

indicators

college classroom or learning lab	microteaching or actual classroom
--prepares lists of field trip locations commonly found in given geographic locations	--arranges trips to business, government, and industrial sites for science classes
--describes procedures for arranging trips and providing for the safety of students	--assists students in obtaining science related work and study experiences
--identifies summer work and study opportunities for science students	--assists students in planning and making arrangements for field trips
	--collects data on cognitive and affective effects of out-of-class experiences

FUNCTION: INSTRUCTS LEARNERS

This teaching function refers to that part of the teachers job in which students are brought together with resources to achieve objectives. The teacher may conduct the instruction in groups or with individuals or bring students into contact with books, films, investigations, and whatever other learning resources are appropriate and available.

Often this function of the teacher is interpreted too narrowly with the teacher considered the primary instructional resource. It is important to remember that there is more to teaching than direct interaction and that instruction can be effectively carried out using resources other than one individual verbally instructing 25 to 30 others.

Competencies or skills associated with this teaching function are diverse. Routine, but important, skills such as equipment operation are essential. Other skills such as leading discussions or using role playing are complex indeed.

An important competency is the conduct of instruction consistent with the philosophy of the materials being used. A number of science curriculum materials (e.g., the federally funded curriculum projects--PSSC, BSCS, ISCS, ESS and so on) were developed with a particular philosophy and classroom strategy in mind. Although some modifications to fit local conditions are expected, too often the intended philosophy and suggested strategy are abandoned.

SKILL: OPERATES INSTRUCTIONAL EQUIPMENT

I-1 indicators

college classroom or learning lab	microteaching or actual classroom
Demonstrates skill with each of the following:	--has audio visual instructional equipment available
--16mm projector	--uses audio visual instructional equipment in teaching
--8mm projector	--teaches and encourages students to use instructional equipment
--overhead projector	
--filmstrip and slide projector	

--polaroid, 35mm or simple cameras

--opaque projector

--reel and cassette tape recorders

--thermofax and ditto machines

--videotape recorder and player

SKILL: DEMONSTRATES USE OF QUESTIONS FROM EACH LEVEL OF BLOOM'S TAXONOMY

I-2

indicators

college classroom or learning lab	microteaching or actual classroom
--presents evidence of having used questions from each of Bloom's six cognitive levels during peer teaching sessions. Evidence will consist of audio tapes of the sessions and a record of the number and percentage of each type of question asked	--collects data on questioning techniques --interprets data and plans revisions of questioning strategies --encourages student questions at all cognitive levels

SKILL: CONDUCTS INSTRUCTION CONSISTENT WITH THE PHILOSOPHY OF SCIENCE MATERIALS USED

I-3

indicators

college classroom or learning lab	microteaching or actual classroom
Designs a plan to implement instruction for a unit that follows the directions, uses the materials, and fits the philosophy of the developer. The units shall be selected to be appropriate to the subject area and grade level of the teacher's choice. Examples of materials that could be used would be a series of SAPA	--studies teaching suggestions in teacher's guide and similar sources --teaches lessons consistent with directions given in teacher guide --teaches lesson and collects and interprets data relative to effectiveness of lesson taught as prescribed

lessons, a chapter or two from ISCS, a series of laboratories in CHEM study, or several BSCS single topic films

--teaches, collects data, and modifies personal teaching behavior

SKILL: PROVIDES OPPORTUNITIES FOR STUDENTS TO USE THE PROCESS SKILLS OF SCIENCE

I-4 indicators

college classroom or learning lab

--demonstrates achievement of each of the following process skills:

measurement, observation, inference, classification, communication, prediction, space/time relations, formulating hypotheses, defining operationally, controlling variables, interpreting data, experimenting

--plans lessons for students designed to teach process skills

--identifies commerical materials that provide students with opportunities to use each of the process skills

microteaching or actual classroom

--plans and implements lessons designed to teach process skills

--considers process skill emphasis of materials when making curriculum recommendations

--uses process skill terminology in discussions with students

--encourages student science projects that emphasize process skills

SKILL: IMPLEMENTS, AND EVALUATES SCIENCE INSTRUCTION DESIGNED TO ACHIEVE STATED INSTRUCTIONAL OBJECTIVES

I-5 indicators

college classroom or learning lab

--describes alternative procedures for evaluating classroom instruction

--describes and defends principles of instruction associated with successful science learning

microteaching or actual classroom

--selects units of instruction for students that have been developed to insure that most students achieve mastery

--participates in designing and implementation of instructional sequences geared to learning for mastery

--collects student achievement data on objectives

SKILL: PREPARES AND TEACHES LESSONS CONSISTENT WITH MODELS OF TEACHING

I-6 indicators

college classroom or learning lab	microteaching or actual classroom
Prepares lesson plans consistent with each of the following models of teaching:	Teaches science lessons consistent with the following models of teaching:
deductive expository	deductive expository
inductive expository	inductive expository
enquiry	enquiry
inquiry	inquiry
mastery	mastery
	(See Figure 1 for indicators associated with each model)

FUNCTION: MOTIVATES LEARNERS

The function of the teacher here is to encourage students to begin learning and to maintain their efforts. Describing how learning may be useful to the student, using praise and encouragement, and using contingent reinforcement are all procedures that a teacher might select.

Motivation of students is a complex matter. To isolate it as a separate function of a teacher may be misleading because the way in which other functions (e.g., specify objectives, diagnose learners, etc.) are carried out may have an impact on student motivation.

To decide whether motivation affects achievement or vice versa is a kind of chicken and egg argument. Some level of motivation is requisite to beginning a learning task. Successful completion of learning frequently leads to heightened motivation. The two seem to be intimately related.

SKILL: IMPLEMENTS ALTERNATIVE PROCEDURES FOR CLASSROOM MOTIVATION

M-1 indicators

college classroom or learning lab

- --describes different techniques for stimulating pupil interest
- --defines appropriate use of contingency management in classroom
- --describes appropriate group structure for accomplishing given tasks (e.g., brainstorming session, peer tutoring, etc.)

microteaching or actual classroom

- --relates present learning to prior learning or to aspect of student's life
- --shows enthusiasm for subject
- --uses a variety of instructional techniques
- --appropriately arranges classroom furniture for given activity
- --decorates room in cheerful, theme-reinforcing manner
- --uses activities favored by students as reinforcers for accomplishment of less favored tasks
- --relates materials to student interest

SKILL: PLANS AND EXECUTES ACTIVITIES THAT FOCUS THE ATTENTION OF STUDENTS ON SPECIFIC TOPICS OR OBJECTIVES

M-2 indicators

college classroom or learning lab

- --prepares lesson plans that include provision for activities that focus attention of student on specific topic
- --describes procedures for focusing student attention on science activities

microteaching or actual classroom

- --uses language comprehensible to students
- --uses activities that relate directly to objectives
- --uses classroom activities that involve creation of cognitive dissonance, student involvement, and/or high visual stimulation

SKILL: MAKES AND INSTITUTES PLANS FOR ALTERING BEHAVIORS OF PUPILS AND PRESENTS EVIDENCE OF IMPACT OF INTERVENTION

M-3

indicators

college classroom or learning lab

- --prepares plans detailing procedures to be used to modify the behavior of one or more specified students
- --describes procedures available for evaluating student behavior change and indicates which are preferred

microteaching or actual classroom

- --sets goals for particular students (with their assistance if possible)
- --collects pretest data on student performance
- --lists series of changes desired in student behavior
- --reinforces behaviors leading to each desired change in a sequential manner
- --ignores or punishes undesired behaviors
- --collects data regarding student performance in regard to desired change
- --revises procedures as necessary

FUNCTION: EVALUATES

Evaluation may have several purposes: to give grades, to compare students, to determine the effectiveness of instructional materials, or to evaluate the effects of teaching procedures. Evaluation is different from diagnosis. Diagnosis is done before and during instruction; evaluation usually refers to assessments made after instruction. Diagnosis is concerned primarily with testing students to find out what objectives they should work on--whether to go ahead to new objectives or whether to study more on the same ones. Evaluation is also concerned with student performance but the decisions to be made concern the effectiveness of teaching materials and procedures on the final performance of students.

SKILL: DESCRIBES AND DEFENDS PROCEDURES FOR ASSIGNING GRADES OR DESCRIBING PUPIL PERFORMANCE IN SCIENCE CLASSES

E-1

indicators

college classroom or learning lab	microteaching or actual classroom
Given achievement records of a class of students for a grading period: --describes a procedure for assigning grades, assigns grades, and defends the assignments	--describes and explains system of grading to students --assigns grades in a manner that conforms to system described --logically defends system and individual grades when challenged

SKILL: PREPARES STUDENT PROGRESS REPORTS SUITABLE FOR CONFERENCES OR FOR RECORDS

E-2

indicators

college classroom or learning lab	microteaching or actual classroom
Given academic records of several students: --describes the responses that will be put in the students record or the communication provided the parents	--plans procedures for progress reports --provides students and parents with written or oral progress reports --provides other school personnel with pupil progress report as needed --includes copies of written progress reports in students cumulative record --emphasizes objective data (in addition to perceptions) in reports of student progress

SKILL: COLLECTS, INTERPRETS, AND USES DATA FROM SYSTEMATIC OBSERVATIONS TO MODIFY TEACHING BEHAVIOR

E-3 indicators

college classroom or learning lab	microteaching or actual classroom
--describes data based procedures for making decisions about changes in teaching behavior	--uses audio tape recorder or video tape recorder to record teaching performance
--classifies teacher behaviors using systematic observation procedures	--systematically analyzes teaching performance using given observation procedures
	--determines on the basis of the analysis what modifications in teaching behavior are needed
	--modifies behavior as needed

Competencies and Teaching Models

The five teaching models described in this chapter have different purposes and different features. Some are aimed at communicating the content of science to learners in an efficient manner; other models are more process oriented. Some models put the teacher at center stage as the presenter of information while others move the teacher to a behind-the-scenes role as a manager of instruction.

Because the teaching models have different purposes and features, the ODPrIME teaching functions receive different emphasis by teachers when using the models. For example, specifying objectives is more of a cooperative student-teacher effort in the inquiry model than in the other models. Learning to use cooperative procedures for finding objectives (skills O-1 and O-2) or to match students with individual interests and resources (skill Pr-5) would, therefore, probably be of more importance to teachers using an inquiry model than another kind.

Consider another instance where certain skills would be emphasized in one model and of less importance in another. In the inquiry model, students can follow their own interests by pursuing investigations of their own choosing. Often the other four models are used to help students learn pre-selected objectives. Because this is so, skills of sequencing instruction (e.g., skill 0-6) would be more often used by teachers using models of instruction aimed at pre-selected objectives. It is not that the inquiry teacher gives no attention to sequence, but that this skill is less used than others.

Figure 2 lists some of the major differences among the models by showing which skills receive special emphasis when using each of the teaching models.

If two teachers are using the same teaching skill they may be exhibiting quite different behaviors if each one is following a different teaching model. For example, consider Skill Pr-7 which is "identifying next tasks based on the results of diagnostic tests." Figure 3 lists some indicators for identifying the use of this skill. One column lists indicators appropriate to the expository-lecture teaching model and the second lists indicators associated with a mastery teaching model. The example illustrates how the teaching model used influences the behavior of a teacher. One can also infer from this example that statements of teaching skills are open to a variety of interpretations. It is not until the context in which the skill is to be exhibited is made clear (e.g., in a college classroom or an actual classroom) and the indicators are specified that the skill statement itself has precise meaning.

Of course what the previous discussion means is that to make an objective or skill statement clear, a description is needed of the circumstances in which the skill is to be exhibited and a description of the acceptable performance of the skill.

Teaching Models	Deductive Lecture-Demonstration	Inductive Lecture-Demonstration	Enquiry	Inquiry	Mastery
Features	-high teacher talk -large group instruction -little student interchange -frequent displays and exhibits	-high teacher talk -large group instruction -little student interchange -frequent displays and exhibits	-frequent discussion sessions -much laboratory work -much student-student interaction	-discussion of real world problems -much individual and small group work -much laboratory and out of school work	-specific objectives and evaluation plans -frequent diagnostic evaluation -heavy teacher-student rather than teacher-group interaction -much individual and small group work
Purposes	-achieve content goals -gain knowledge of facts and explain phenomena	-achieve content goals -learn to generalize to new situations	-achieve process goals -produce users and understanders of scientific procedures	-develop action skills for active citizens -learn to identify and solve real problems	-achieve objectives -skew the grade distribution curve (most students should get high grades)
Skills of special Importance	Pr-9	Pr-9	I-2, I-4	O-1, O-2, Pr-3 Pr-6, I-2, I-4	O-4, Pr-2, Pr-3, Pr-4, Pr-6, I-5, M-3

Figure 2. Features, purposes, and special skills for five teaching models.

Deductive Lecture-Demonstration Model	Mastery model
--administers diagnostic tests to all class members	--administers diagnostic tests to individual students
--selects next task for the class dependent on the performance of most students	--selects "next" tasks based on individual performance
--selects a single treatment for all students as a result of diagnostic tests	--selects different tasks for different students as a result of diagnostic tests

Figure 3. Indicators of carrying out skill Pr-7 for two different teaching models.

This is exactly what proponents of behavioral (or performance or instructional) objectives have said for years; good objectives need three parts--a statement of conditions, a behavioral term, and a description of acceptable performance. These three elements are provided in this chapter by listing the context (college classroom, learning lab, microteaching, or actual classroom), the skill statement, and the indicators.

Some Final Comments

To plan and operate a teacher training program is an enormous task; to attempt a competency based program adds to the labor. A first task when planning a program based on competencies is to decide on the competencies of interest. Thousands of skills could be aimed for but economics dictate a selection from the possible objectives. Once the competencies are selected, materials are developed to teach the skills and evaluation efforts are planned to find out if the skills are acquired.

Every teacher educator realizes that to carry out all the activities just described is not adequate even though that is all one may have time to do. Attention must be paid also to the validity of the skills chosen for a program. Are they skills that make a difference when teachers use them? In other words, do students learn more or have better attitudes when their teachers use the chosen skills compared to results when other skills are used? Efforts to validate teaching skills are few in number and must be intensified before teaching skills can be included in training programs with confidence. In addition to research efforts to validate teaching skills, development work is needed to produce materials to train teachers to use them. The skills described in this chapter indicate that a variety of materials may be needed--video tapes or films, collections of readings, samples of teaching units and diagnostic tests, audio materials, and so on.

Procedures and materials for evaluating students and program elements are also needed. The context in which a skill is learned and the nature of the skill itself will require a variety of evaluation devices. Paper and pencil tests, observation forms, attitude measures, and pupil achievement tests are all needed to evaluate the achievement of different skills.

Concepts Underlying the Science Teaching Competencies

developmental levels
performance objectives
cognitive level
cognitive objectives
affective objectives
psychomotor objectives
learning hierarchy
Bloom's *Taxonomy*
norm-referenced test
criterion-referenced test
formative evaluation
summative evaluation
standardized test
Piagetian task
reading level
models of instruction
science process skills
mastery learning
advance organizer
probing questions
contingency contracts
reinforcer
reinforcement
contingency management
cognitive dissonance
systematic observation

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CHAPTER 10

GENERIC TEACHING SKILLS IN TEACHER SKILL TRAINING

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All teaching skills are specific in actual performance. The concept that there are "generic" or general teaching skills is formed by abstracting components or attributes from specific performance instances. Since there are a great many components or attributes of teaching, a wide variety of classes of skills can be formed. For example, skills involved in teaching special subject matters or particular age levels, in using particular approaches, in discharging particular teaching functions, and skills classified according to the kind of teacher acts or behaviors involved. The foregoing *General Catalog of Teaching Skills* makes use of all of these classifications.

To arrive at very general teaching skills, certain classifications of skills must be temporarily ignored. For example, the fact that teachers teach specific skills or subjects at particular age levels can be momentarily by-passed, as can the fact that they use different approaches. By using such an abstraction process, two residual classifications of skills can be defined. One is based on the functions and tasks of teachers and the other on the behaviors or acts of teachers. Although both of these ways of classifying generic teaching skills rest on exactly the same base of specific skills, the outcomes of using one form of classification as opposed to the other are different.

The function and tasks approach to generic skill classification collects specific teaching skills around the teaching tasks to be performed. These tasks are in turn collected within or ordered to the broad teaching functions such as coping with goals and objectives, with teaching materials, with face to face instruction of students, and with diagnostic and evaluational activity. Within a particular teaching function, relatively specific, yet generic tasks may appear. For example, developing objectives, locating objectives, selecting objectives, stating objectives in behavior terms, relating objectives to each other and so on. Tasks of this type are specific in the sense they can be isolated and assessed, but generic in the sense they apply very generally to teaching.

The teaching behaviors or acts approach to generic skill classification collects specific teaching skills around classes of actions. In the preceding chapters of the General Catalog these classes of actions appear in the form of the verbs used in stating teaching skills or indicators of such skills. Since the Catalog was constructed under the task approach to skills rather than the behaviors approach, these verbs are not grouped in any systematic way in preceding chapters. So that the reader may see that the verbs can be ordered to classes, the principal verbs employed in these chapters are grouped and labeled as follows:

Defining Skills

defines
identifies
distinguishes
specifies
describes

Development Skills

develops
invents
designs
devises
constructs
locates
collects
formulates
adapts

Selecting Skills

selects
justifies (gives rationale for)

Organizing Skills

arranges
organizes
sequences

Presenting Skills

introduces
structures
demonstrates
engages
conducts
explains
articulates
relates

Eliciting Skills

questions
challenges
confronts
probes
elicits

Responding Skills	Nurturing Skills	Attending and Appraising Skills
supports	encourages	questions
corrects	guides	constructs
reflects	shapes	observes
clarifies	facilitates	listens
reinforces		collects
accepts		distinguishes
expands		administers
re-directs		records
limits		reports

These two ways of classifying generic teaching skills are related to each other, but the relationship is complex. It may be described along the following lines.

What teachers do as they perform their work is discharge functions or execute function-related tasks. How these tasks are executed depends on the teacher's level of sophistication, repertoire or simply skill level with respect to certain classes of behavior. For example, teachers who know only how to ask "lower level" or factual questions can engage in drill activities or recitation and discharge a portion of their instructional function in this way. If they do not know how to pose inquiry or problem-raising questions, however, they cannot execute the instructional function in the inquiry mode. Thus, the level of skill one has in the particular class of generic behaviors labeled "questioning" is a determinant of the level of skill one shows in another, differently conceptualized, class of generic skills, namely, executing face to face instruction. It is for this reason that arraying or classifying skills according to instructional approaches is important to the General Catalog. It is principally in the different approaches to instruction that generic skills as acts or behaviors and generic skills as tasks or functions intersect.

Teacher Skill Training

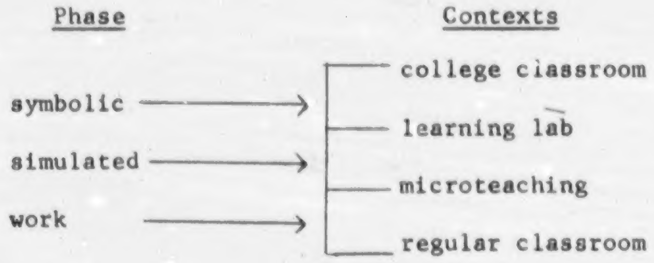
The application of generic skills to teacher skill training can be approached under at least three different models. One model, (the "approaches" model) is to train teachers in the approaches to instruction appropriate to their particular teaching field. In this model, generic behaviors such as defining, eliciting, and responding, together with generic functions or tasks, such as setting goals and objectives or evaluating are conjoined in the context of a particular approach to instruction and learned in this context. Thus instead of learning about the various types and levels of questions and the ways of asking them, the teacher learns those forms of questioning appropriate to a particular approach, say inquiry. Under this model, as teachers learn the different approaches to their particular field they acquire different levels of skill in the various classes of generic behaviors related to teaching as well as practicing different forms of execution of the generic functions. Non-generic or specialized tasks or functions peculiar to particular approaches in particular fields are also learned.

The critical assumptions underlying this model of teacher skill training are that teachers subsume their skills under broad teaching strategies or approaches and that the necessary skills are brought into play as they move through the various functions or tasks to be executed in a particular approach.

The second model, (the "behaviors" model) of skill training is based on separating skill training in the generic classes of behaviors from training on function-related tasks and from approaches to teaching. Thus teachers would be trained in the various kinds of sequencing skills, questioning skills, responding skills and so on. These skills, once mastered, would then be brought "on line" by the teacher at some later point while engaging in the function-related tasks or trying to master new approaches.

The critical assumption underlying this model of teacher skill training is that teachers can retain or hold in mind a substantial repertoire of skills and bring them to bear on a particular teaching problem when needed. Thus if a teacher decides to use a particular approach or strategy in teaching, he or she calls up, as it were, the skills required as the approach is executed.

A third model, (the "spiral" model) of skill training draws components from both models 1 and 2. In this model, increments in skill levels in the generic teaching behaviors and generic task performance are brought about in phases which correspond to the training contexts discussed by Brown in Chapter [illegible]. These phases and contexts are presented below.



In the first phase the teacher learns to describe the skill and identify its characteristics verbally. In the second phase he or she may see other teachers model the skill, define its scope and nuances, and practice component parts of the skill. In the third phase, the teacher practices the skill in context and refines his or her performance of it. Thus the teacher re-cycles over a skill in different contexts, improving and expanding mastery (or "spiraling") as the contexts become increasingly realistic.

The critical assumption underlying this model is that learning different levels of a skill can be spaced and the learning context shifted, hence the teacher can remember, transfer and improve skills across phases or cycles of training.

Of the three models presented, the "approaches" model appears in its clearest form in Joyce and Weil's Models of Teaching (1972). These authors do not advocate that teachers be trained by model 1, but this model is clearly implied by the very organization of the book. The second or "behaviors" model is based on the procedures used in "Minicourse 1", produced at the Far West Laboratory, (Borg. 1973), and by the procedures used in training technical teaching skills at the Stanford R and D Center (e.g., Koran, Koran and McDonald, (1972). The third or "spiral" model is derived from "Levels of Criteria" (Turner, 1972) in relation to the way in which protocol and training materials may be employed in Teacher Education (Smith, 1969). It is the spiral model on which the remainder of this chapter is based.

Elaboration of Training Under the Spiral Model

Teacher training under the spiral model depends to a substantial degree on the use of technological aids to instruction. Three types of aids are necessary. The first is protocol or concept-developing materials. Applied to teacher pedagogical skills, protocol materials are made in audio, video or filmic form. They present instances of a particular principle or concept such as "reinforcing", "shaping" or "reflecting". They are useful in helping preparatory and practicing teachers identify the concept underlying a particular aspect of teaching by showing concrete instances which supplement or fill out a merely verbal or symbolic grasp of the concept. They show what the concept means in practice.

The second type of aid is training materials. Training materials may vary widely in composition, but they rest on two principles: 1) they show exactly what the behavior or skill to be learned is like, 2) they require the teacher to produce either parts of the skill or the entire skill. Protocol materials may be used in conjunction with training materials if they show exactly what a teaching behavior is like, hence help develop a clear concept of that behavior. In many instances, the skill to be acquired by a teacher is highly verbal or "cognitive" and has a low overt or action component. For example, sequencing instructional objectives. In such instances, the training materials may be largely verbal, for example, programmed instruction, and protocol materials would not be functional in skill training. Depending on their composition, training materials may be employed in a wide variety of training contexts. However, since such materials frequently require audio, film or video equipment and potentially an interactive computer, as well as curriculum materials, apparatus or manipulables (as for example in mathematics) the preferred context is a learning laboratory in which such equipment and materials are easily accessible.

The third type of aid is video taping with play back, as in microteaching. This aid permits the preparatory teacher to practice with a small group of learners a skill having many overt or action components, and then to compare or judge the performance (or have it judged by someone else) so that corrections may be made. Thus practice with feedback is possible. The same type of aid may be employed in a regular classroom by a student teacher or a practicing teacher, and presumably would be called "macroteaching."

Generic Teaching Skills by Phases and Functions

To integrate the various points expressed above - that generic skills may be classified by both teaching functions and teaching behaviors, and that these skills may be trained in phases - four summary tables are shown on the following pages. These tables are organized first by teaching functions: 1) goals and objectives, 2) materials and environment, 3) face-to-face instruction and 4) diagnosis and evaluation, and each table is thus labeled.

The second level of organization in the tables gives the contexts or phases in which training can occur. Within this organization, each "generic" teaching skill as a behavior is listed under "actual classroom", where it would normally be exercised. The antecedent training contexts are then given to the left of "actual classroom", with the type of aid or training useful in each context coded in. To the right of "actual classroom" are given a sample of the chapter numbers and skill code numbers in which the generic skill is noted or described in the General Catalog. The reader may thus turn to the General Catalog and examine the way in which various chapter authors deal with these skills in context.

Careful examination of the "generic" skills listed in Tables 1-4, relative to the context in which the skill label is employed in the General Catalog, suggests that the concept of generic skills in teaching must be treated with great caution. For example, the term "sequences" appears under goals and objectives, materials and learning environment, and face-to-face instruction, but it is not clear that this term points to exactly the same behaviors or abilities under each function, nor is it clear that this ability is independent of the subject matter on which it is exercised. Although it is clear that "sequencing" is an important skill common to teaching a wide variety of subjects and age levels, it does not follow that a single kind of protocol or training materials, or practice in sequencing within a particular function, will produce a generalized form of the skill. For this reason, teacher trainers and developers of protocol and training materials must conduct a careful analysis of each skill and be prepared to develop carefully differentiated materials which train teaching skills in the form in which they can actually be applied.

Table 1. Skills Related to Goals and Objectives

Contexts				Sample Indicators
Symbolic	Simulated	Work		
College Classroom	Learning Lab	Microteaching	Actual Classroom	Chapter** and Skill Code
V* PF			identifies	9-0.0.1, 7-0.1.1, 7-0.1.2
V, PF			constructs develops	9-0.0.3, 6-0.1.3
V, PF			defines specifies describes	4-1.1.1, 3-2.1.1
V, PF			distinguishes	7-0.1.3
V, PF			selects	6-0.1.1, 8-1.3.1
V, PF			justifies	8-1.4.1, 7-0.1.4
V, PF	TM	PF	sequences	6-0.1.3
V, PM	PM, TM	PF	introduces	6-1.3.3
V, PM	PM, TM	PF	explains	8-3.4.3
V, PM	PM, TM	PF	elicits/clarifies	4-3.1.1, 9-0.0.2

*Code: V=verbal, PM=Protocol Material, TM=Training Material, PF=Practice with Feedback; it is assumed that the work context permits practice with Feedback as well as the preliminary forms of skill training, if required.

**Chapter numbers are underlined

Table 2. Skills Related to Materials and the Learning Environment

	Contexts				Sample Indicators
	Symbolic		Simulated	Work	
	College Classroom	Learning Lab	Microteaching	Actual Classroom	Chapter and Skill Codes
Materials	V	PF		develops invents devises	6-0.2.2, 3-2.2.1
		PF		locates	6-0.2.1, 9-Pr-8
	V	PF		selects/justifies	3-3.2.1, 7-0.1.11., 8-3.6.3
		PF		sequences	6-0.2.3
	V, PF			collects	6-3.2.1
	V	TM	PF	assigns	4-1.2.2
Environment	V, PM	PM, TM		arranges organizes	3-2.2.2, 3-3.2.2, 9-Pr-7, 8-1.8.1 4-1.2.1, 4-2.2.1

Table 3. Skills Related to Face-to-Face Instruction

Contexts				
Symbolic		Simulated	Work	Sample Indicators
College Classroom	Learning Lab	Microteaching	Actual Classroom	Chapter and Skill Codes
V, PM	PM, TM	PF	introduces	9-I-6, 6-2.3.2
V, PM	PM, TM	PF	structures	6-2.3.4
V, PM	PM, TM	PF	demonstrates	9-Pr-9, 9-I-4, 6-4.3.2
V, PM	PM, TM	PF	engages	3-1.3.1
V, PM	PM, TM	PF	sequences	9-I-6, 6-0.2.4, 7-0.1.7
V, PM	PM, TM	PF	explains	6-2.3.2, 7-0.2.5
		PF	articulates/relates	9-M-1, 6-1.3.7, 7-0.1.6, 8-0.5.1
V, PM	PM, TM	PF	questions	6-2.3.5, 7-0.2.7
V, PM	PM, TM	PF	probes	6-3.3.4
PM		PF	challenges	6-2.3.9
PM	TM	PF	confronts	6-3.3.2
PM	TM	PF	elicits	6-2.3.5, 6-3.3.3, 6-3.3.5
V, PM	PM, TM	PF	supports	4-4.4.1
V, PM	PM, TM	PF	corrects	4-1.2.4
V, PM	PM, TM	PF	reflects	4-4.3.3

Table 3. continued

Contexts				Sample Indicators
Symbolic	Simulated	Work		
College Classroom	Learning Lab	Microteaching	Actual Classroom	Chapter and Skill Code
V, PM	PM, TM	PF	clarifies	6-2.3.5, 6-3.3.4, 4-4.4.2
V, PM	PM, TM	PF	reinforces	7-0.2.11, 3-1.3.2, 4-2.1.1
V, PM	PM, TM	PF	accepts	6-2.3.7
	TM	PF	expands	6-2.3.7
V, PM	PM, TM	PF	redirects	7-0.2.9, 3-2.3.2, 4-3.3.2, 4-4.4.2
	TM	PF	listens	4-4.3.3
	TM	PF	observes	4-2.3.1, 4-4.3.3
V, PM	PM, TM	PF	limits	4-4.3.2
		PF	encourages	3-3.3.1, 4-1.2.2, 4-3.3.1
		PF	guides	6-2.3.6
V, PM	PM, TM	PF	shapes	3-1.1.2, 4-2.3.2
V, PM	PM, TM	PF	facilitates	6-3.3.6, 6-3.3.7, 6-3.3.9

Table 4. Skills Related to Diagnosis and Evaluation

Contexts				
Symbolic	Simulated	Work		Sample Indicators
College Classroom	Learning Lab	Microteaching	Actual Classroom	Chapter and Skill Code
V, PM	PM, TM	PF	interviews	6-4.4.1, 7-0.3.4
	TM	PF	observes	6-1.3.4
			questions	7-0.3.6
V		PF	interprets	7-0.3.1, 7-0.3.4
V, PM	PM, TM	PF	monitors	3-3.4.1, 4-1.2.3
V, PF	TM		selects	8-2.2.2
	TM, PF		designs/constructs	9-D-1, 7-0.3.2, 7-0.3.4, 8-1.2.1, 8-3.14.3
V, PF			devises	8-0.1.1
V, PF			articulates	7-0.3.4
	TM	PF	administers	9-D-2, 7-0.3.5, 8-3.2.3
V			collects	9-E-3, 4-2.4.2
	TM		records	9-D-3
V, PM	PM, TM		describes/reports	3-1.4.1, 3-3.4.1, 4-1.3.2

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